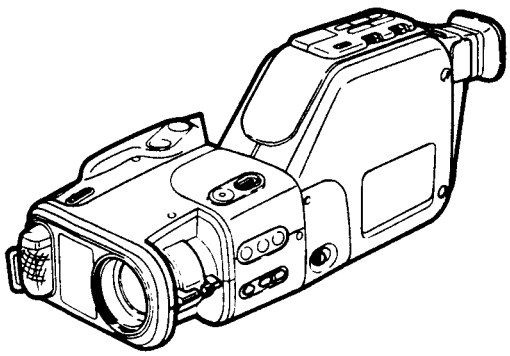
HITACHI

SERVICE MANUAL

TK | No. 3244E

VM-C1E,E(UK)
VM-C1E(SW),E(AV)



Technical Data

MANUAL RELATED TO THE VM-C1E

TITLE	MODEL	MANUAL No.
Technical Information	VM-C1E	No. 3245E

SPECIFICATIONS

■ **General**

Power requirements	6V DC
Power consumption	6.8 watts (when the manual focus mode is selected)
Dimensions	69(W) x 120(H) x 280(D) mm
Weight	0,98 kg
Operating temperature	0°C ~ 40°C
Storage temperature	−10°C ~ 50°C

■ **Video Recorder Section**

Format	VHS
Record/playback system	Four video record/playback heads
Video signal	PAL colour & CCIR monochrome signals 625 lines
Tape speed	SP: 23.39 mm/sec., LP: 11.7 mm/sec.
Video output	1.0 Vp-p, 75 ohm
Audio output	300 mV, less than 1K ohm

■ **Camera Section**

Scanning	625 lines/50 fields/25 frames
Required minimum illumination	7 lux
Camera device	1/2" CCD image sensor
Lens diameter	37 mm

VHS C

This video deck is a VHS-C type video recorder. For proper operation, only the VHS-C type cassette must be used.

SAFETY PRECAUTIONS

The following precautions should be observed when servicing.

1. Since many parts in the unit have special safety-related characteristics, always use genuine Hitachi replacement parts. Especially critical parts in the power circuit block should not be replaced with other makers' parts! Critical parts are marked ⚠ in the schematic diagrams.
2. Before returning a repaired unit to the customer, the servicing technician must thoroughly test the unit to assertain that it is completely safe to operate without danger of electrical shock.

SPECIFICATIONS AND PARTS ARE SUBJECT TO CHANGE FOR IMPROVEMENT

VIDEO CAMERA / RECORDER

April 1990 TOKAI WORKS

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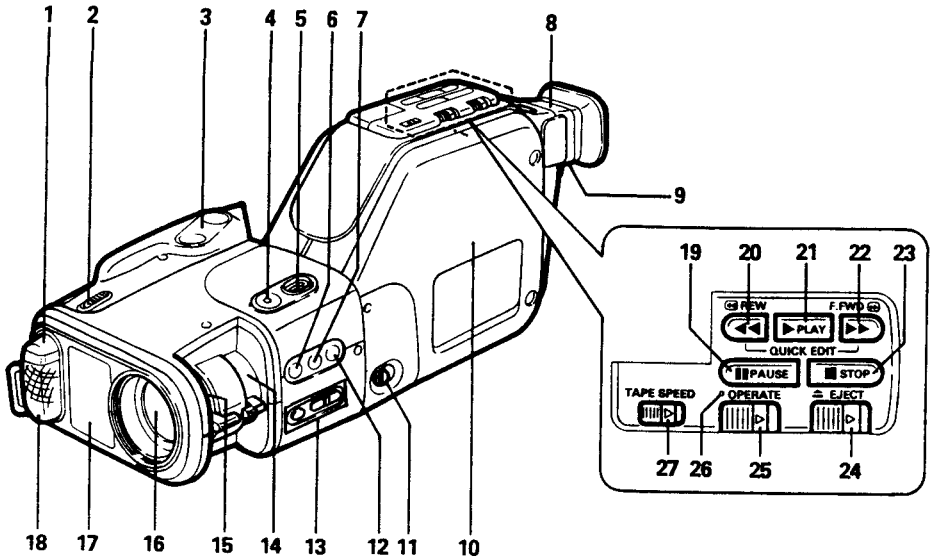


1. **60 Hz Detection Sensor**
When a subject is shot under fluorescent lighting in areas where the power frequency is 60 Hz (in U.S.A., Canada, etc.) flickering occurs in the picture.
When this sensor detects 60 Hz, it changes the shutter speed automatically so that no flickering occurs.
NOTE: When a subject is shot under fluorescent lighting in areas where the power frequency is 50 Hz, the shutter speed is set to 1/50 automatically.

2. **BATTERY Eject Lever**
Release the battery attached to the video camera/recorder.

3. **Power Zoom Switch**
This switch performs zooming electrically.
"W": Picture becomes wider gradually.
"T": Picture becomes telescopic gradually.

4. **FADE Button**
During recording you can add a professional touch to your recordings by fading in and out of scenes.
NOTE: When you use FADE button to fade in and out, the sound will also fade in and out with the picture.

5. **FOCUS Button**
When adjusting the focus manually, press this button to make "F.MANUAL" appear in the viewfinder and then turn the focus ring to bring the subject into focus.

6. **DATE Button**
Press this button to display the date and clock in the viewfinder. Whenever the date and clock appear in the viewfinder, they will be recorded on the tape.

7. **DISPLAY Button**
Pressing this button once causes the battery indicator and the amount of remaining time appear in the camera/recorder viewfinder.
Pressing the button again will cause a 4-digit tape counter and battery indicator to appear.
Press the button a third time will cause memory mark "M" to appear. Press a 4th time to delete all displays.

8. **Electronic Viewfinder (EVF)**
Displays what the camera/recorder lens sees. The electronic viewfinder also functions as a convenient black-and-white monitor during playback of recorded material.

9. **Diopter Control**
To use the electronic viewfinder without eyeglasses on, turn this control knob for your optimum focus adjustment.

10. **Cassette Holder**
Slide EJECT switch to open the cassette holder. Be aware of the cassette direction when inserting.
NOTE: Power source must be connected to open the cassette holder.

11. **UNLOCK Switch**
To turn on the power of the camera, slide this switch in the direction of the arrow, and while holding it, twist the grip. This turns the camera on.
To turn on the power of the VTR, slide the switch in the direction of the arrow, and while holding it, twist the grip in the opposite direction, then slide the OPERATE switch.

12. **RESET Button**
When the tape counter is displayed in the viewfinder, pressing this button resets the counter to "0000".

13. **Titler Buttons**
Use these buttons to store a title in memory or recall the stored title and record it superimposed on the picture being shot.

14. **Zoom Ring (Manual Zooming)**
The picture size can be magnified 6 times with the use of the zoom feature. Just rotate the zoom ring for a close up (T) or wide angle (W) picture. Macro close-up, as close as 1 cm from object, is feasible.

15. **Focus Ring**
Do not attempt to manually turn the focus ring when the camera/recorder is in the auto focus mode.

16. **Lens**
F1.8 (9.0 ~ 54.0 mm) 6:1 power zoom lens features with auto focus and auto iris functions.

17. **Auto Focus Window**
To automatically focus the camera lens, this window transmits and receives infrared light which is reflected off the subject. Make sure you don't obstruct this window when recording.

18. **Microphone**
Sensitive to sounds coming from the direction in which the camera is pointed.

19. **PAUSE Button**
This button is used to display a still picture during playback mode.

20. **REW Button**
Press this button during stop or fast forward mode, and fast-rewinding starts. "REWIND" indication appears in the viewfinder whenever the tape counter or time remaining is present. Press the button during playback of tape, and the tape is played back in the rewind direction approximately 3 times faster than the normal speed (SP recorded tape) or 7 times faster than the normal speed (LP recorded tape) to confirm the recorded contents. Press PLAY button to return to normal playback mode or press STOP button to stop tape movement.
NOTE: You can also visually scan backward when the camera/recorder is record/pause (stand-by) mode by pressing and holding this button.

21. **PLAY Button**
Used for playback of tape.
NOTE: When the camera/recorder is record/pause (stand-by) mode, pressing and holding this button will play the tape at normal.

22. **F.FWD Button**
Press this button during stop or rewind mode, and fast-forwarding starts. "FAST FWD" indication appears in the viewfinder whenever the tape counter or time remaining is present. Press the button during playback of tape, and the tape is played back in the forward direction approximately 3 times faster than the normal speed (SP recorded tape) or 7 times faster than the normal speed (LP recorded tape) to confirm the recorded content. Press PLAY button to return to normal playback mode or press STOP button to stop tape movement.
NOTE: You can also visually scan forward when the camera/recorder is record/pause (stand-by) mode by pressing and holding this button.

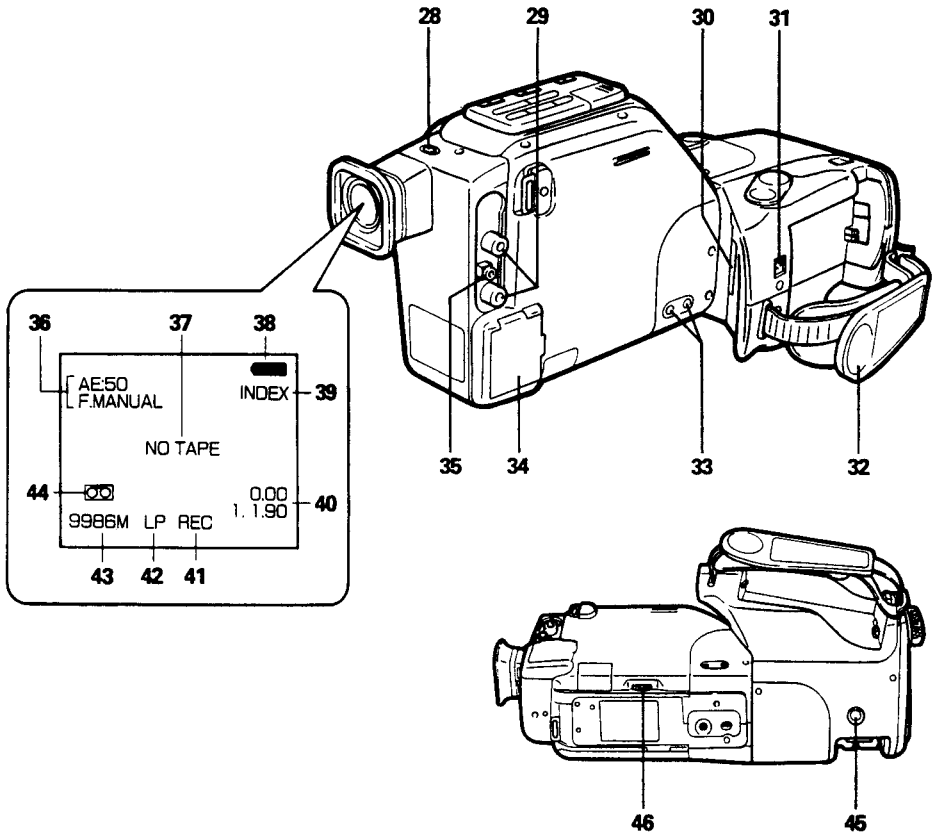
23. **STOP Button**
The STOP button is used to stop playback, rewind, and fast forward operations. The STOP button has no effect during record operation.

24. **EJECT Switch**
Slide to insert or remove the cassette.

25. **OPERATE Switch**
Slide this switch to turn on the VTR.

26. **OPERATE/Dew Indicator Light**
Flashing of the light indicates dew condensation on camera/recorder mechanism. While this light is flashing, the unit will not operate. If this ocurs, eject the tape and leave the power on. When the light stops flashing, the unit can be operated.

27. **TAPE SPEED Switch (LP/SP)**
This switch selects the recording speed. "SP" provides the best picture quality but the shortest recording time (30 minutes with E-C30 tape).
"LP" provides slightly reduced picture quality, but longer recording time (1 hour with E-C30 tape).
NOTES:
- Tape speed switch has no effect during playback. When playing tapes, the tape speed is selected automatically.
- "LP" is displayed in the viewfinder, but "SP" is not.



28. Eye Cup Release Button
If dust, etc. enters the viewfinder, press this button to remove the eye cup and remove the dust.

29. AUDIO/VIDEO OUT Jacks
Connect the audio/video output cable to these jacks and to the audio and video inputs of your TV/monitor receiver. You may also connect the RF converter unit between these jacks and your TV receiver.

30. Record Start/Stop Button
This button is used to control the camera/recorder. When this button is pressed with the camera/recorder set to the recording mode, the tape runs to start recording.
When this button is pressed again, the tape stops and the camera/recorder enters the record/pause (stand-by) mode.

31. DC 6V Jack
When using the AC adaptor/charger, connect one end of the DC cord (provided) to this jack and the other end to "DC OUTPUT" of the AC adaptor/charger. When using the car cord (optional), connect this jack and the car's cigarette lighter socket.

32. Hand Strap
Adjust to best fit to your hand.

33. DATE/TIME Set Buttons
These buttons are used to set the clock (time and date) in your camera/recorder so it can be recorded on your tapes for future reference.

34. Clock Battery Compartment
Pull the tab to open the cover and install the clock battery (provided).

35. RFU DC OUTPUT Jack
Connect the RF converter unit (optional) to this jack.

36. SHUTTER SPEED and FOCUS MODE Indicators
These indicate the shutter speed and focus mode.

37. TAPE Indicator
When the camera/recorder is set to the camera mode and a cassette without its erase prevention tab is loaded, "NO TAB" flashes continuously.
When a cassette is not in the camera/recorder, "NO TAPE" flashes for several seconds.
When the tape reaches the end and the remaining time is three minutes, "REM.3MIN" flashes. When you continue recording, flashing changes to "REM. 2MIN", "REM.1MIN" and "REM.0MIN", then "TAPE END" appears at the end of tape.
NOTE: "NO TAB" may also flash when there is no cassette in the camera/recorder.

38. Battery Level Indicator
Indicates the battery condition.
When the battery is fully charged, the display shows "▬". When the battery is very nearly empty, the display shows "▭". When "▭" starts blinking, you should find an alternative power source or recharge the battery.

39. INDEX Indicator
See page 16 for details.

40. DATE/TIME Indicator
Indicate the date/clock during the record or record/pause (stand-by) mode. You can record the clock and/or date with object when recording.

41. MODE Indicator
Indicates the operating modes;
- "REC" appears and "→→" appears and moves during the record mode.
- "REWIND" appears during the rewind mode.
- "FASTFWD" appears during the fast forward mode.

NOTE: "→→", "REWIND" and "FASTFWD" appear only when the tape counter or tape remaining time is displayed.

42. Tape Speed Indicator (LP)
Shows the recording speed during recording and playback. Nothing is displayed when you select SP.

43. TAPE REMAIN/COUNTER Indicator
Shows the tape remaining or tape counter.

44. TAPE Indicator
- ▭ : Shows that a cassette is inserted.
- E-C30: Shows the type of cassette tape.

45. BLC Button
When the subject is lit from behind, press this button for back-lighting correction.

46. TRACKING Control
Used when playing a tape recorded on another VTR. Adjust for best picture. At all other times leave it in the center position, which can be found as a small detent in the movement of the knob.

MEMO

CHAPTER 2 DISASSEMBLY

1. VTR SECTION REMOVAL

1-1. Cassette Lid

1. Remove two (2) screws and remove the cassette lid in the direction of arrow (A). (See Fig. 2-1)

1-2. Eye Cup

1. Push the eye cup lock button and remove the eye cup in the direction of arrow (B). (See Fig. 2-1)

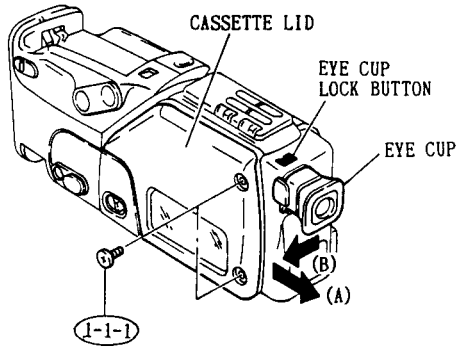


Fig. 2-1

1-3. VTR Right Case

1. Remove seven (7) screws and remove the right case in the direction of the arrow. (See Figs. 2-2, 2-3)

Note: When installing the VTR right case, be careful of the fitting with the VTR left case so that a step difference dose not occur between them (especially, near the Hitachi marking of the function switch).
When installing the VTR right case, be careful that the cushion dose not protrude near the tracking control.

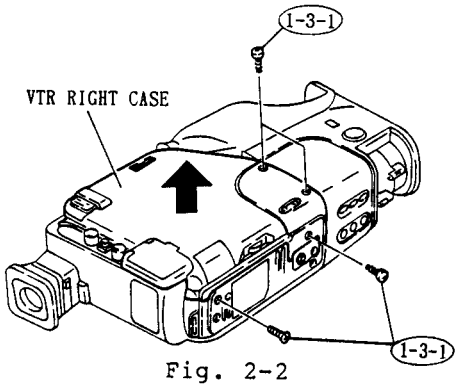


Fig. 2-2

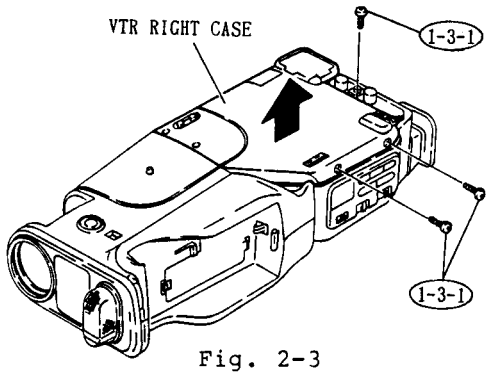


Fig. 2-3

1-4. Electronic Viewfinder (EVF) Block

ORDER FOR REMOVING PARTS	ITEM No.
∘ VTR Right Case	1-3

1. Disconnect one (1) flat cable (CN801) on the main circuit board. (See Fig. 2-4)
2. Remove two (2) screws holding the EVF block.
3. Release one (1) tab of the left case and remove the EVF block.

Note: Fit the EVF block to the tab of the left case completely.
When installing the EVF block, lay out the wires so they do not touch the screw support of the VTR left case and tighten the EVF block with screws while pushing it against the VTR left case.

1-5. Function Switch

ORDER FOR REMOVING PARTS	ITEM No.
∘ VTR Right Case	1-3

1. Release one (1) tab and remove the function switch cover in the direction of arrow (A). (See Fig. 2-4)
2. Remove one (1) screw holding the function switch.
3. Disconnect one (1) flat cable (CN951) on the main circuit board.
4. Remove the function switch in the direction of the arrow (B) from the VTR left case.

Note: Remove the function switch block in the direction of arrow (B) while lifting the section of the Hitachi marking printed on the block slightly after setting the twist grip to the "VTR" position.
The function switch block is engaged with the left case via four (4) tabs.
When installing the function switch block, be careful that the flat cable is not caught between the main circuit board tape transport mechanism.

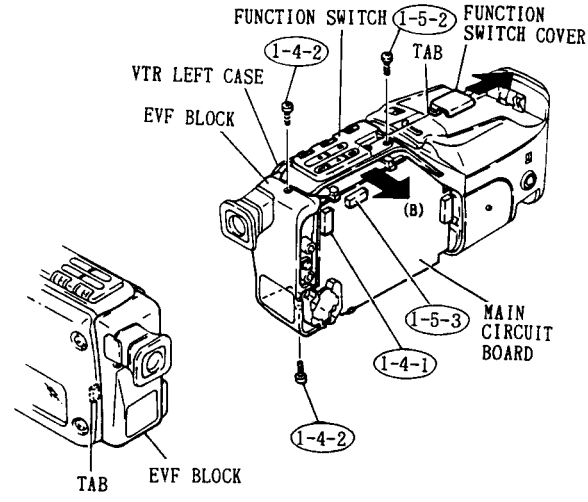


Fig. 2-4

1-6. VTR Left Case

ORDER FOR REMOVING PARTS	ITEM No.
° Cassette Lid	1-1
° Eye Cup	1-2
° VTR Right Case	1-3
° EVF Block	1-4
° Function Switch	1-5

1. Remove three (3) screws and remove the VTR right case. (See Fig. 2-5)

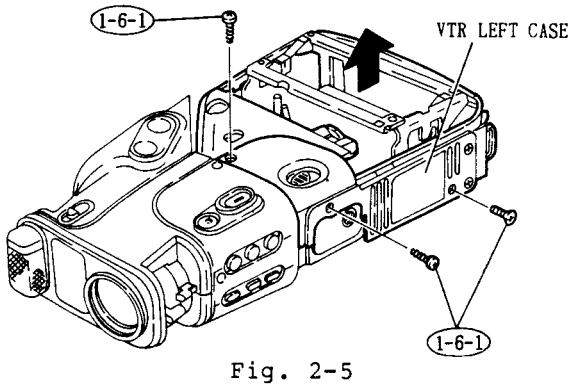


Fig. 2-5

1-7. Main Circuit Board

ORDER FOR REMOVING PARTS	ITEM No.
° VTR Right Case	1-3
° Function Switch	1-5

1. Turn the twist grip to CAM position. (See Fig. 2-6)
2. Remove one (1) screw holding the preamp shield and turn the twist grip VTR position.
3. Release four (4) tabs and remove the preamp shield cover. (See Fig. 2-7)
4. Disconnect two (2) flat cables (CN101, CN801) on the main circuit board.
5. Release three (3) tabs and open the main circuit board in the direction of the arrow. (The main circuit board is connected to the motor drive circuit board via the board-in type connector.)
6. Disconnect six (6) connectors (CN1M, CN105, CN106, CN402, CN806, CN972) on the main circuit board. (See Fig. 2-8)

Note: Be sure to check the connection with the motor drive circuit when installing the main circuit board.

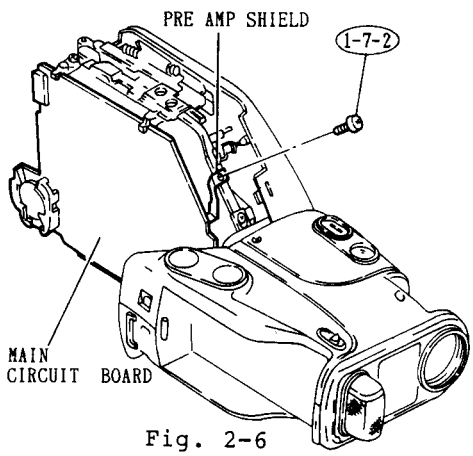


Fig. 2-6

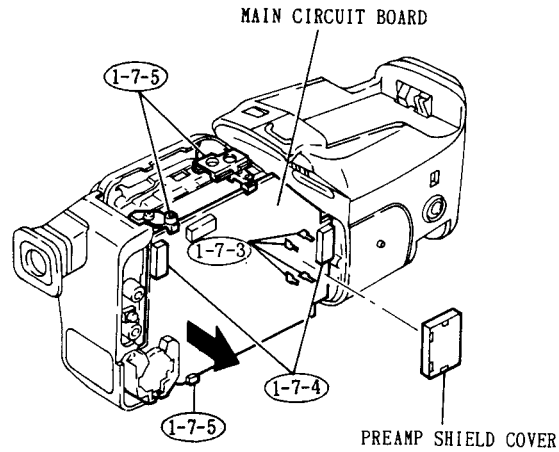


Fig. 2-7

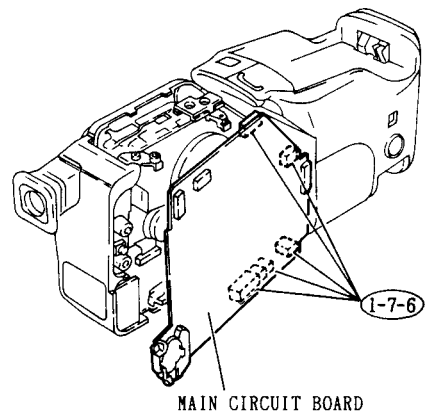


Fig. 2-8

1-8. Tape Transport Mechanism

ORDER FOR REMOVING PARTS	ITEM No.
° Cassette Lid	1-1
° Eye Cup	1-2
° VTR Right Case	1-3
° EVF Block	1-4
° Function Switch	1-5
° VTR Left Case	1-6
° Main Circuit Board	1-7

1. Turn the twist grip to CAM position. (See Figs. 2-9, 2-10)
2. Remove two (2) screws holding the rotary section and tape transport mechanism.

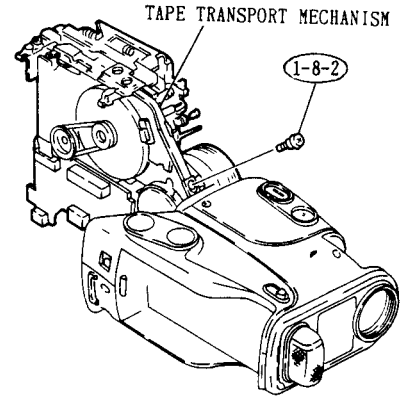


Fig. 2-9

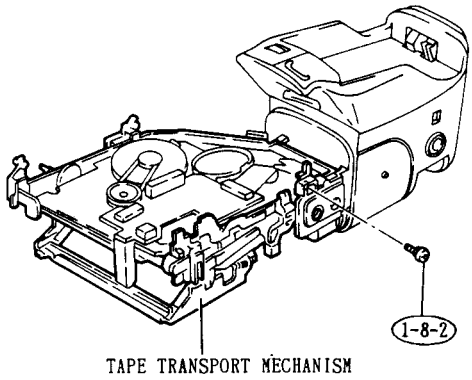


Fig. 2-10

2. CAMERA SECTION REMOVAL

2-1. Camera Bottom Case

1. Turn the twist grip to CAM position and remove one (1) screw. (See Fig. 2-11)
2. Turn the twist grip to VTR position.
3. Remove eight (8) screws and remove the camera bottom case. (See Figs. 2-12, 2-13)

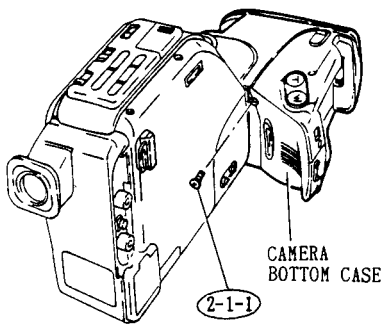


Fig. 2-11

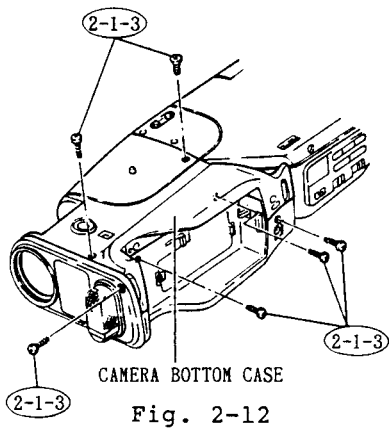


Fig. 2-12

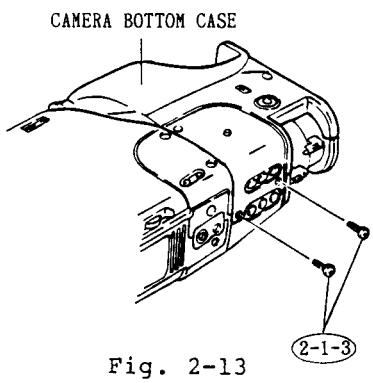


Fig. 2-13

2-2. Camera Block

ORDER FOR REMOVING PARTS	ITEM No.
∘ Camera Bottom Case	2-1

1. Remove two (2) screws holding the camera top case and camera block. (See Fig. 2-14)
2. Disconnect two (2) connectors (CN2M, CN306) and one (1) cable. (See Fig. 2-15)
3. Disconnect two (2) connectors (CN103, CN105) on the process circuit board.
4. Remove the camera block from the camera top case.

Note: Attach the camera block to the camera top case so the process circuit board is inserted into the groove inside the camera top case.

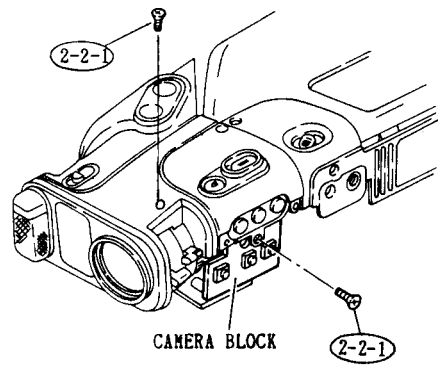


Fig. 2-14

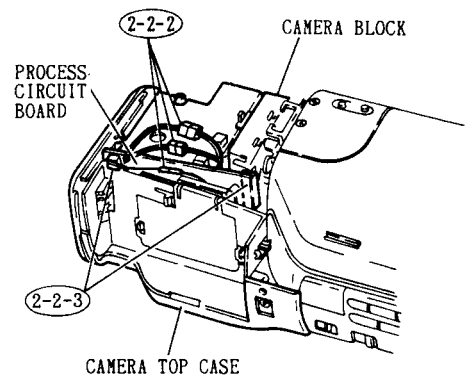


Fig. 2-15

2-3. Battery Holder, Zoom Switch, Power Supply Circuit Board

ORDER FOR REMOVING PARTS	ITEM No.
∘ VTR Right Case	1-3
∘ Function Switch	1-5
∘ Camera Bottom Case	2-1
∘ Camera Block	2-2

1. Open the main circuit board. (See Figs. 2-6, 2-7)
2. Disconnect connector PG972 on the main circuit board. (See Fig. 2-16)
3. Remove one (1) screw holding the camera top case and battery holder. (See Fig. 2-17)

4. Remove the EXT. DC jack in the direction of the arrow from the camera top case.
5. Remove the battery holder in the direction of arrow (A) from the camera top case. (See Fig. 2-18)
6. Remove the zoom switch in the direction on arrow (B) from the battery holder.
7. Unsolder two (2) points of the battery terminals and remove one (1) screw holding the power supply circuit board.

Note: Do not damage the cables when pulling out the connector from the VTR section to the camera side. When removing the battery holder, be careful of the spring between the holder and battery eject button because it also comes off. Attach the spring between the battery eject button and battery holder in the specified position. When installing the power supply circuit board, be careful that the wires do not ride over the spacer (gray) on the battery holder.

2-4. Camera Top Case

ORDER FOR REMOVING PARTS	ITEM No.
° VTR Right Case	1-3
° Function Switch	1-5
° Camera Bottom Case	2-1
° Camera Block	2-2
° Battery Holder	2-3

1. Open the main circuit board. (See Figs. 2-6, 2-7)
2. Disconnect connector CN1M on the main circuit board. (See Fig. 2-16)
3. Remove one (1) screw holding the camera top case. (See Fig. 2-17)
4. Release one (1) tab and remove the camera top case from the rotary section. (See Fig. 2-18)
5. Remove one (1) screw holding the microphone.

Note: Do not damage the cables when pulling out the connector from the VTR section to the camera side. Reinstall the camera top case so the lens shutter lever is set to a position (on the bracket of the rotating section) as shown in Fig. 2-19 after setting the twist grip to the "VTR" position.

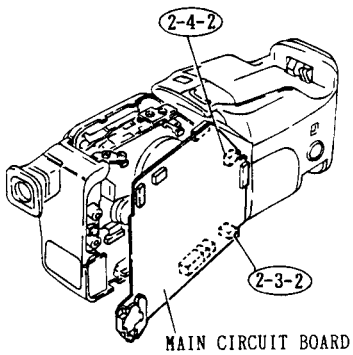


Fig. 2-16

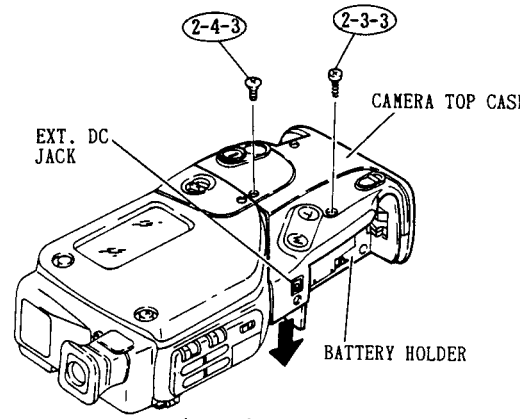


Fig. 2-17

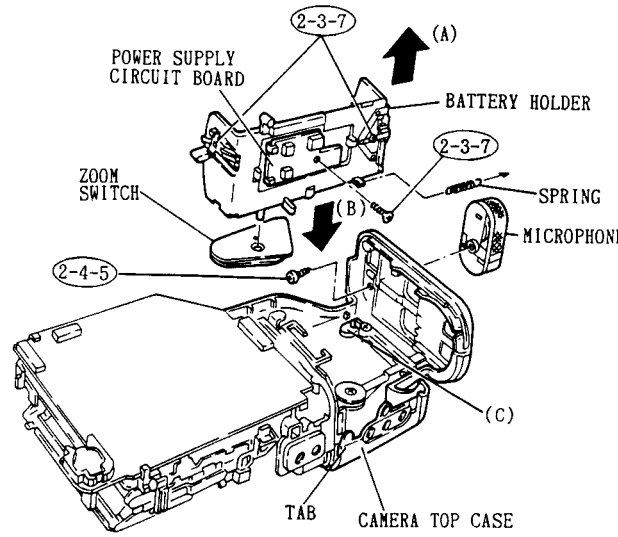


Fig. 2-18

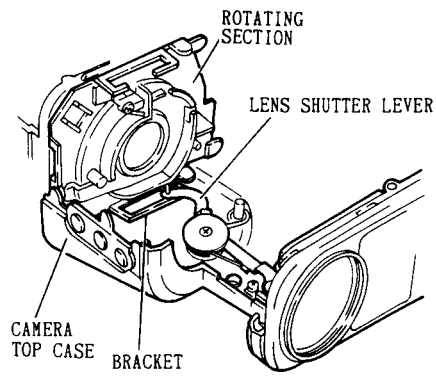


Fig. 2-19

2-5. Process Circuit Board

ORDER FOR REMOVING PARTS	ITEM No.
° Camera Bottom Case	2-1
° Camera Block	2-2

1. Remove the process circuit board from IC002 (sensor/pre-process) and autofocus circuit board, in the direction of the arrow.
2. Disconnect connector CN1DD on the process circuit board.

Note: Be sure to check the connections with IC002 (sensor/pre-process) and autofocus circuit board when installing the process circuit board.

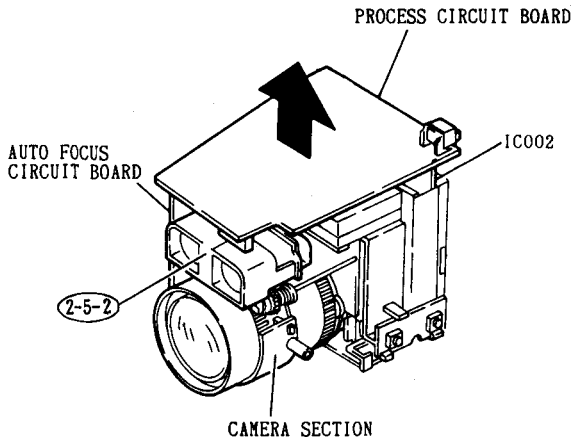


Fig. 2-20

2-6. DC-DC Converter, Autofocus Circuit Board

ORDER FOR REMOVING PARTS	ITEM No.
∘ Camera Bottom Case	2-1
∘ Camera Block	2-2
∘ Process Circuit Board	2-5

1. Release one (1) tab and remove the DC-DC converter in the direction of arrow (A). (See Fig. 2-21)
2. Remove one (1) screw holding the autofocus circuit board.
3. Open the autofocus circuit board in the direction of arrow (B) separating from the control (1) circuit board. (The autofocus and control (1) circuit boards are connected via the board-in type connector.)
4. Disconnect five (5) connectors (CN303, CN304, CN311, CN312, CN314). (See Fig. 2-22)

Note: Be sure to check the connection with the control (1) circuit board when installing the autofocus circuit board.
When installing the DC-DC converter, be careful that its wires do not touch the lens block.

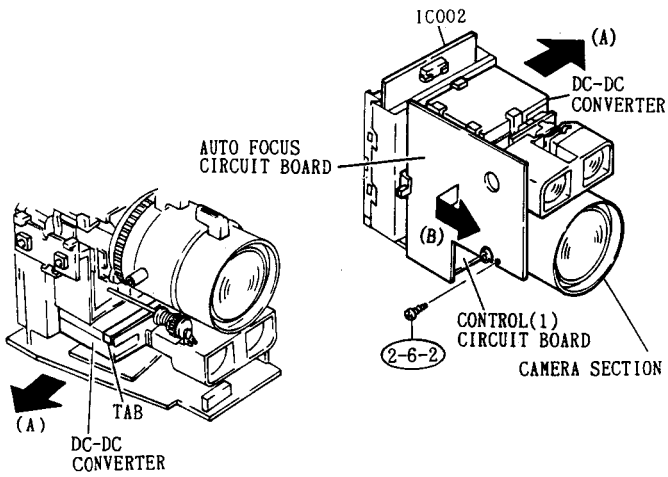


Fig. 2-21

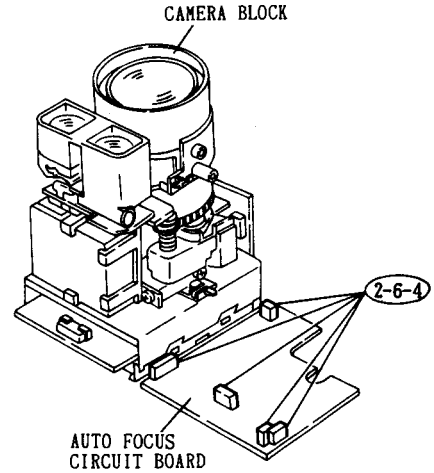


Fig. 2-22

2-7. Control (1) and (2) Circuit Board

ORDER FOR REMOVING PARTS	ITEM No.
∘ Camera Bottom Case	2-1
∘ Camera Block	2-2

1. Release one (1) tab and remove the control (2) circuit board in the direction of arrow (A) from the control circuit board holder. (See Fig. 2-23)
2. Release two (2) tabs and remove the control (1) circuit board in the direction of arrow (B) from the auto focus circuit board. (The control (1) and autofocus circuit boards are connected via the board-in type connector.)

Note: Be sure to check the connection with the autofocus circuit board when installing the control (1) circuit board.

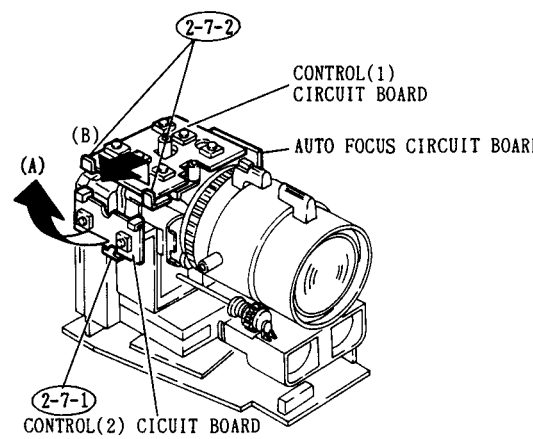


Fig. 2-23

2-8. IC001 (CCD Image sensor), IC002 (Sensor/Pre-Process)

ORDER FOR REMOVING PARTS	ITEM No.
∘ Camera Bottom Case	2-1
∘ Camera Block	2-2
∘ Process Circuit Board	2-5

1. Release two (2) tabs and remove the sensor shield cover in the direction of the arrow. (See Fig. 2-24)

2. Unsolder twenty (20) points on the IC002.
3. Remove two (2) screws holding the IC002.
4. Remove two (2) screws holding the filter holder. The crystal holder and light shading rubber will come off at this time. (See Fig. 2-25)
5. Pull out the IC001 from the IC002.

Note: Be sure to unsolder the 20 soldered points on IC002 so that there is no solder left. Take great care of the crystal filter.
Reinstall IC001 by the reverse procedure to removal so that IC001 and IC002 are parallel.
Tighten the two (2) screws each of IC002 and the filter holder evenly.
When installing the sensor shield cover, fix it with adhesive tape so it dose not open.

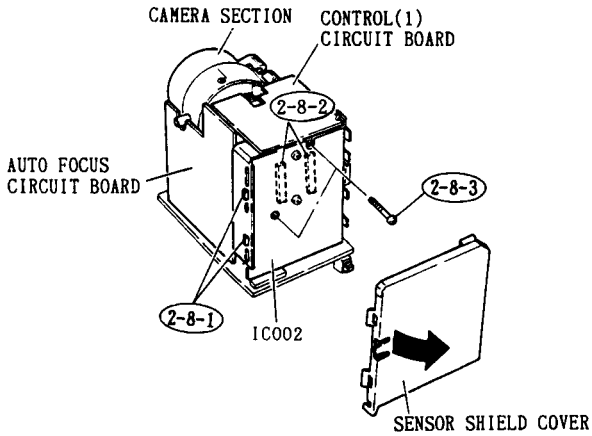


Fig. 2-24

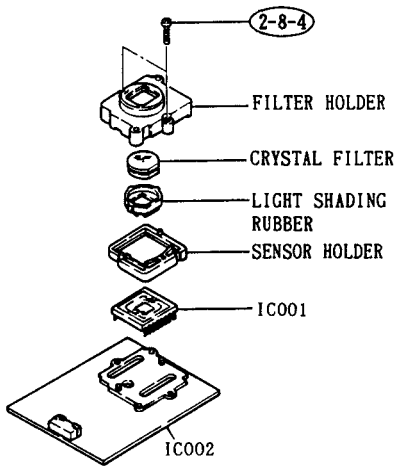


Fig. 2-25

2-9. Camera Switch

ORDER FOR REMOVING PARTS	ITEM No.
° VTR Right Case	1-3
° Function Switch	1-5
° Camera Bottom Case	2-1
° Camera Block	2-2

1. Open the main circuit board. (See Figs. 2-6, 2-7)
2. Disconnect connector PG972 on the main circuit board. (See Fig. 2-26)
3. Remove one (1) screw holding the camera switch. (See Fig. 2-27)

Note: Do not damage the cables when pulling out the connector from the VTR section to the camera side.

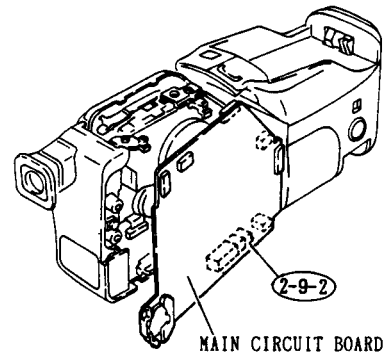


Fig. 2-26

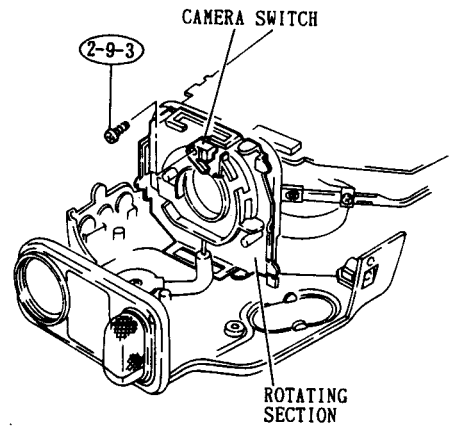


Fig. 2-27

2-10. Rotating Section

ORDER FOR REMOVING PARTS	ITEM No.
° Cassette Lid	1-1
° Eye Cup	1-2
° VTR Right Case	1-3
° EVF Block	1-4
° Function Switch	1-5
° VTR Left Case	1-6
° Camera Bottom Case	2-1
° Camera Block	2-2
° Battery Holder	2-3
° Camera Top Case	2-4
° Camera Switch	2-9

1. Remove two (2) screws holding the rotating section and tape transport mechanism. (See Fig. 2-28)

Note: Be careful that the cables between the VTR and camera sections are not damage when removing the rotating section.
Layout the cables as shown in Fig. 2-29 when installing the rotating section.
Incorrect layout of cables could cause a disconnection of defective contact.

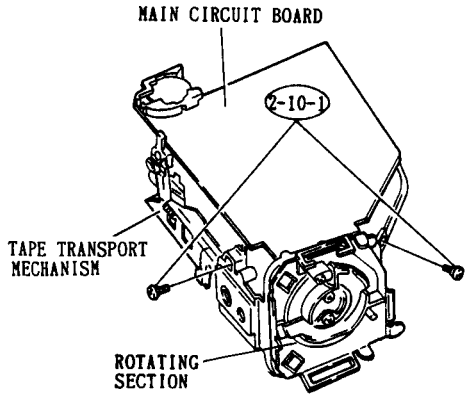


Fig. 2-28

LAYOUT OF CABLES

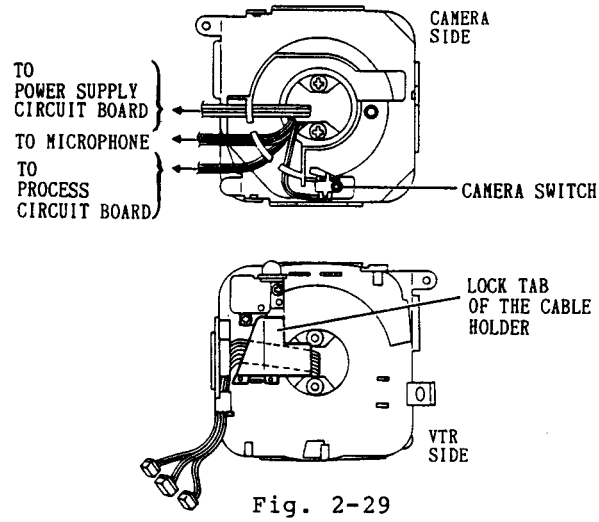


Fig. 2-29

MAIN MECHANICAL COMPONENTS IDENTIFICATIONS (TOP VIEW)

1. Cylinder Brush
2. Upper Cylinder
3. Take-up Guide Pole
4. Audio/Control (A/C) Head
5. Plate Spring
6. X-Value Adjustment Nut
7. Pressure Roller
8. Take-up Loading Ring
9. Middle Guide Arm
10. Take-up Reel Gear
11. Take-up Gear
12. Supply Loading Ring
13. Take-up Brake
14. Centre Gear Block
15. End Lamp
16. Take-up Guide Roller
17. Loading Gear Block
18. Tension Band
19. Supply Reel Disk
20. Safety Tab Switch
21. Loading Motor
22. Tension Arm
23. Supply Guide Roller
24. End Sensor
25. Impedance Roller
26. Catcher Block

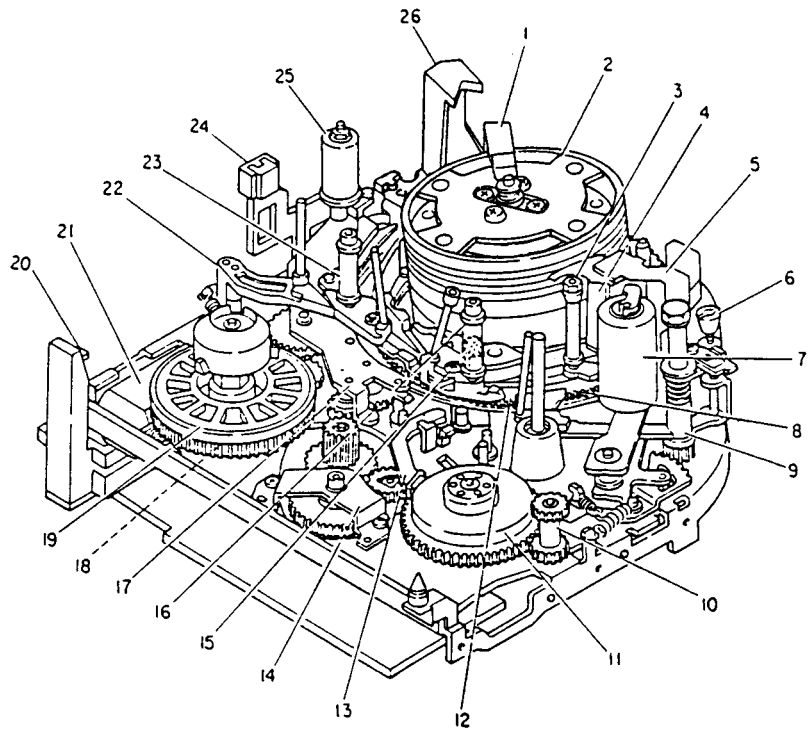


Fig. 2-30

MAIN MECHANICAL COMPONENTS IDENTIFICATIONS (BOTTOM VIEW)

1. Lower Cylinder
2. Mechanism State Switch
3. Motor Drive Circuit Board
4. Capstan Belt
5. Capstan Motor

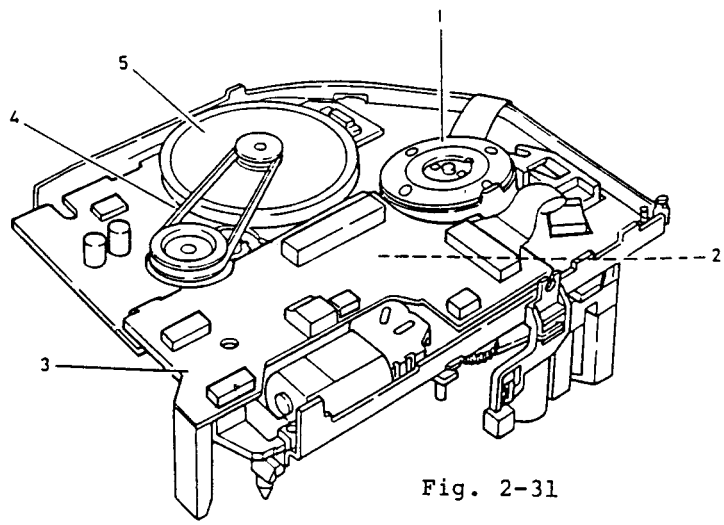


Fig. 2-31

3. MAIN MECHANICAL COMPONENTS REMOVAL

Reinstall the components by the reverse procedure to removal when no caution items are given.

ORDER FOR REMOVING PARTS	ITEM No.
° Cassette Lid	1-1
° Eye Cup	1-2
° VTR Right Case	1-3
° EVF Block	1-4
° Function Switch	1-5
° VTR Left Case	1-6
° Main Circuit Board	1-7
° Tape Transport Mechanism	1-8

3-1. Cassette Holder

1. Disconnect connector CN554. (See Fig. 2-51)
2. Move the cassette holder lock lever in the direction of the arrow to lift up the cassette holder. (See Fig. 2-52)
3. Remove four (4) screws holding the cassette holder and remove the holder together with the holder switch from the chassis. (See Figs. 2-52, 2-53)

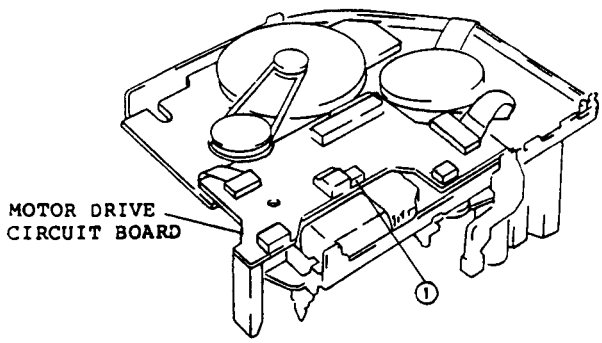


Fig. 2-51

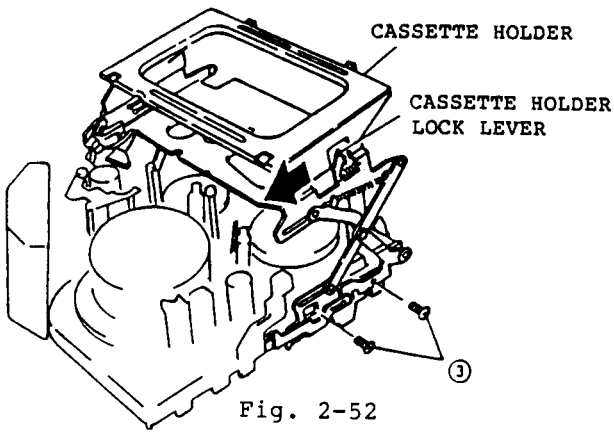


Fig. 2-52

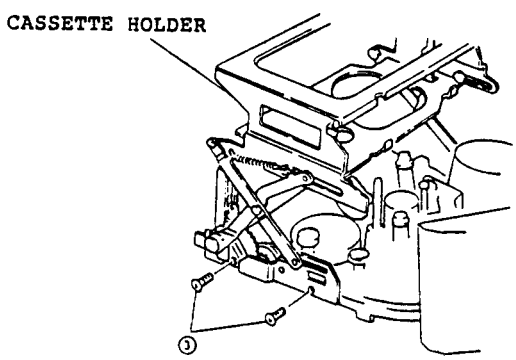


Fig. 2-53

3-2. Cylinder (Upper Cylinder/ Lower Cylinder)

Upper Cylinder

1. Remove one (1) screw holding the cylinder brush. (See Fig. 2-54)
2. Remove two (2) screws holding the upper cylinder.
3. Pull out the upper cylinder from the lower cylinder.

Lower Cylinder

4. Disconnect flat cable CN552. (See Fig. 2-55)
5. Remove three (3) screws holding the lower cylinder.

Note: Do not touch the video head tips with your fingers or tools during the work.
Since the upper cylinder uses connectors, pull it out at right angles to the axis of rotation of the cylinder.
Tighten the two (2) screws holding the upper cylinder evenly.
Reinstall the cylinder brush so its contact comes into contact with the centre of the cylinder shaft.
Adjust as follows after installing the upper cylinder.

CHAPTER 3

6. ADJUSTMENT AFTER REPLACING CYLINDER (VIDEO HEAD)

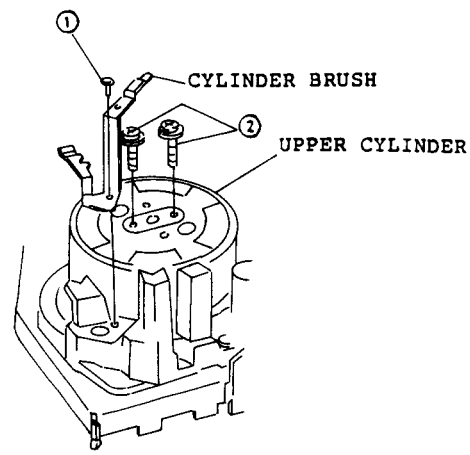


Fig. 2-54

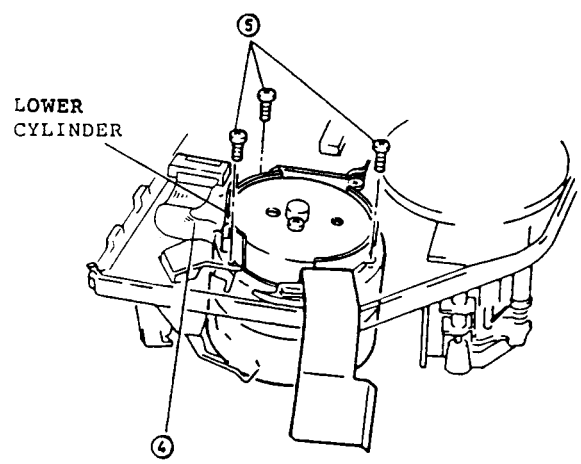


Fig. 2-55

3-3. Audio/Control (A/C) Head

1. Remove one (1) nut holding the plate spring. (See Fig. 2-56)
2. Remove three (3) screws holding the A/C head.

Note: Adjust as follows after installing the A/C head.

CHAPTER 3

5-4. A/C HEAD ADJUSTMENT

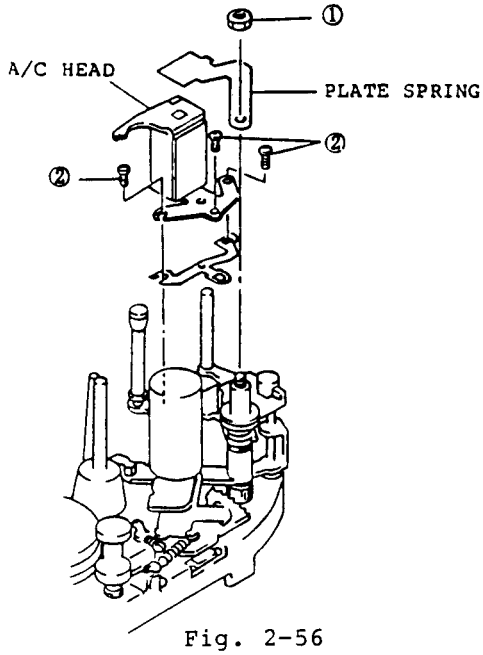


Fig. 2-56

3-4. End Sensor

1. Disconnect connector CN556. (See Fig. 2-57)
2. Remove one (1) screw holding the end sensor. (See Fig. 2-58)

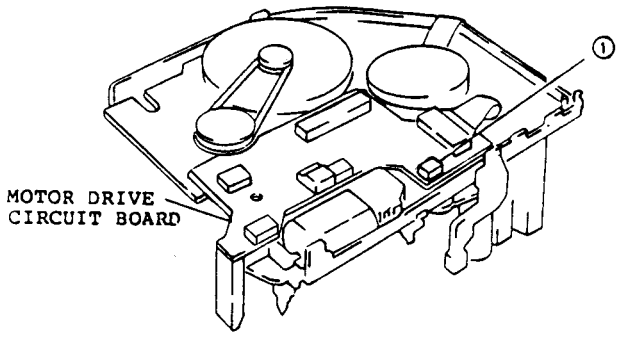


Fig. 2-57

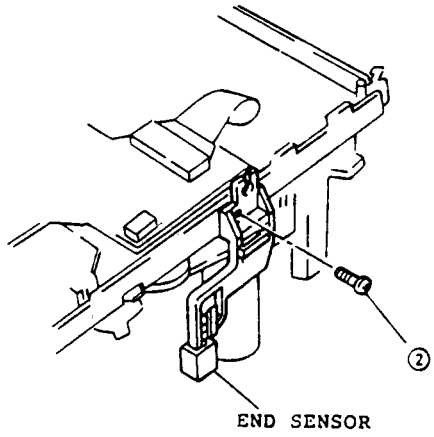


Fig. 2-58

3-5. Cassette Holder Switch

1. Disconnect connector CN554. (See Fig. 2-59)
2. Release two (2) tabs on the cassette holder switch. (See Fig. 2-60)

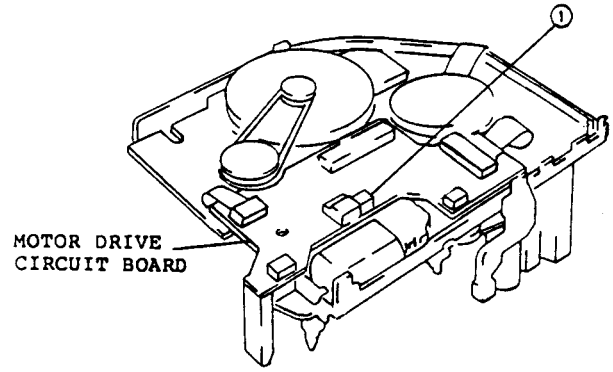


Fig. 2-59

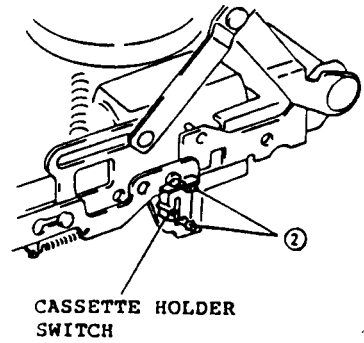


Fig. 2-60

3-6. Dew Sensor

1. Remove one (1) screw holding the dew sensor. (See Fig. 2-61)

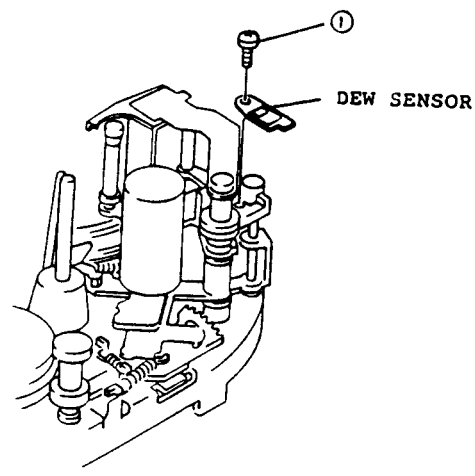


Fig. 2-61

3-7. Motor Drive Circuit Board (Safety Tab Switch, Supply Reel Sensor, End Lamp)

1. Disconnect four (4) connectors (CN554, CN555, CN556, CN557). (See Fig. 2-62)
2. Disconnect two (2) flat cables (CN552, CN553).
3. Remove three (3) screws holding the motor drive circuit board.

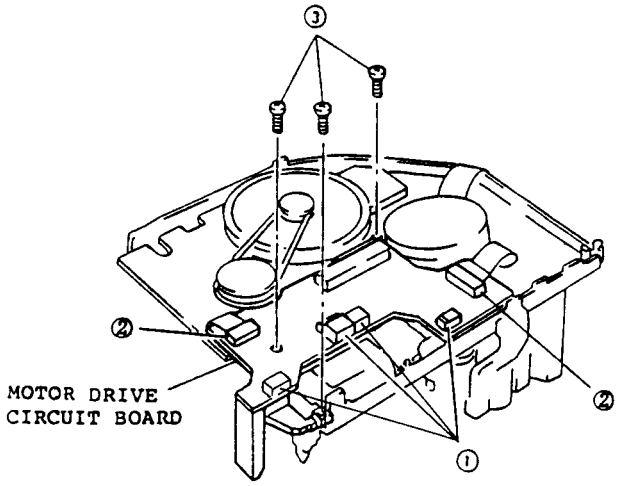


Fig. 2-62

3-8. Mechanism State Switch

ORDER FOR REMOVING PARTS	ITEM No.
° Motor Drive Circuit Board	3-7

1. Remove two (2) screws holding the mechanism state switch. (See Fig. 2-63)

Note: Adjust as follows after installing the mechanism state switch.
CHAPTER 3
2. MECHANISM STATE SWITCH PHASE MATCHING IN ASSEMBLY.

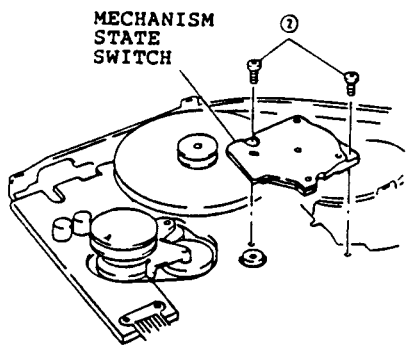


Fig. 2-63

3-9. Loading Motor

ORDER FOR REMOVING PARTS	ITEM No.
° Motor Drive Circuit Board	3-7

1. Remove two (2) screws holding the loading motor. (See Fig. 2-64)

Note: Be careful that the loading gear (1) comes off when the loading motor is removed.

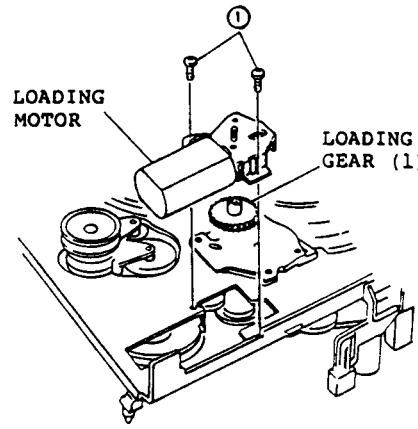


Fig. 2-64

3-10. Capstan Motor (Take-up Reel Sensor, Capstan FG Sensor)

ORDER FOR REMOVING PARTS	ITEM No.
° Motor Drive Circuit Board	3-7

1. Remove the capstan belt. (See Fig. 2-65)
2. Remove three (3) screws holding the capstan motor while moving the middle guide arm in the direction of the arrow. (See Fig. 2-66)

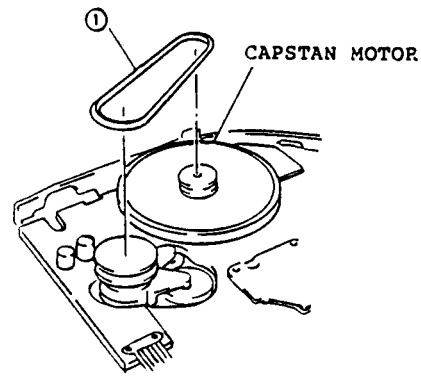


Fig. 2-65

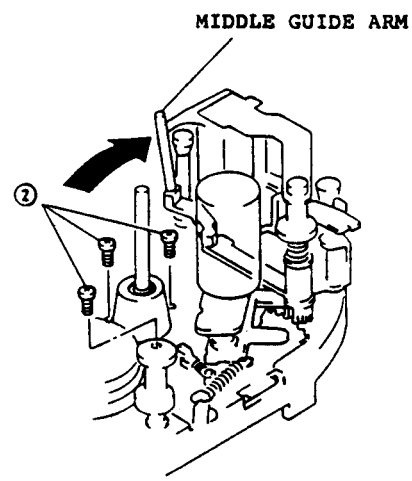


Fig. 2-66

3-11. Impedance Roller

1. Remove one (1) nut holding the impedance roller and pull out the roller from the chassis. (See Fig. 2-67)

Note: Be careful that the impedance roller sleeve, three washers and the flange come off when the impedance roller is removed. When reinstalling the impedance roller, be sure to put two specified washers (0.25 and 0.13 mm thick) between the chassis (loading gear block) and flange. Tighten the fixing nut until it stops.

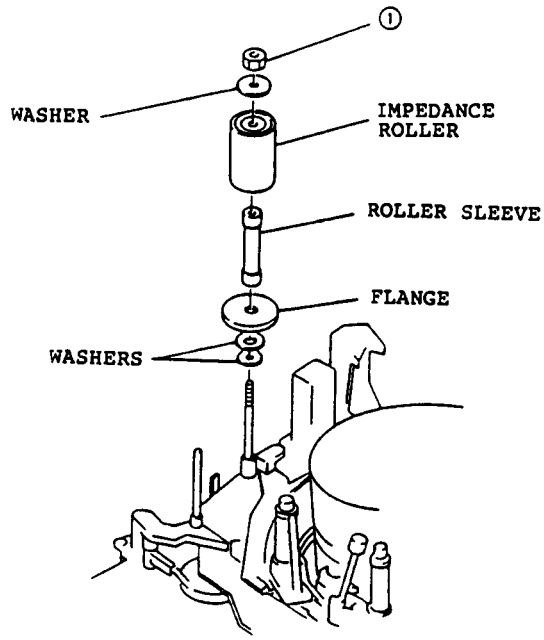


Fig. 2-67

3-12. Take-up Guide Pole

Note: As the take-up guide pole provides a reference for the tape transport system, do not remove it without sufficient reason.
Adjust as follows after installing the take-up guide pole.
CHAPTER 3
5-2. TAKE-UP GUIDE POLE HEIGHT ADJUSTMENT

1. Loosen the nut at the top of the take-up guide pole and pull out the pole from the chassis. (See Fig. 2-68)

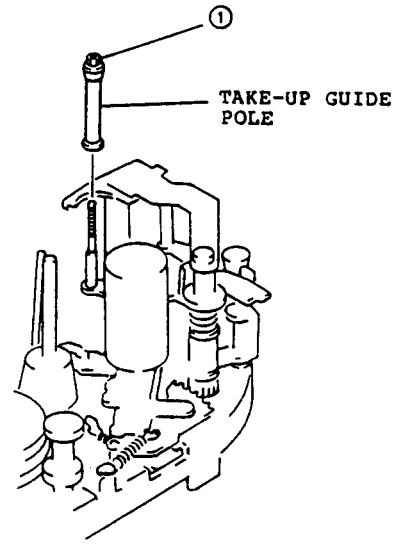


Fig. 2-68

3-13. Supply Guide Roller

ORDER FOR REMOVING PARTS	ITEM No.
◦ Cassette Holder	3-1

1. Remove one (1) hexagonal screw (0.7 mm) holding the supply guide roller. (See Fig. 2-69)
2. Turn the top of the supply guide roller counterclockwise using a hexagonal wrench (2.0 mm) to remove the roller from the roller base.

Note: Adjust as follows after installing the supply guide roller.
CHAPTER 3
5-2. GUIDE ROLLER HEIGHT ADJUSTMENT

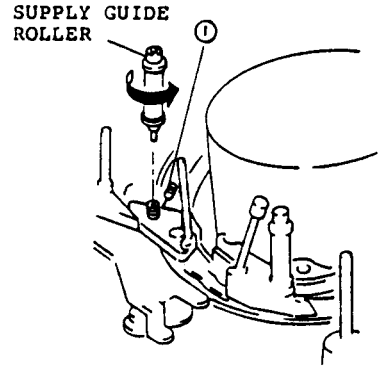


Fig. 2-69

3-14. Take-up Guide Roller

ORDER FOR REMOVING PARTS	ITEM No.
° Cassette Holder	3-1

1. Remove the hexagonal screw (0.7 mm) holding the take-up guide roller. (See Fig. 2-70)
2. Turn the top of the take-up guide roller counterclockwise using a hexagonal wrench (2.0 mm) to remove the roller from the roller base.

Note: Adjust as follows after installing the take-up guide roller.
CHAPTER 3
5-2. GUIDE ROLLER HEIGHT ADJUSTMENT

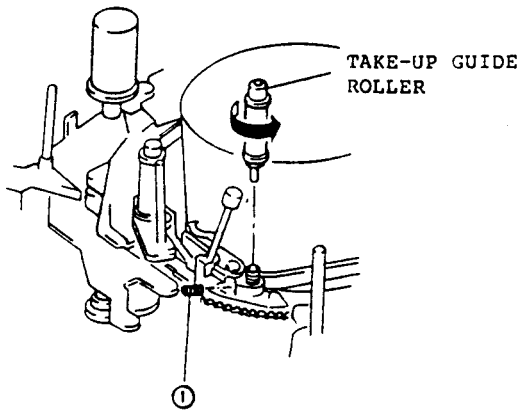


Fig. 2-70

3-15. Take-up Brake

ORDER FOR REMOVING PARTS	ITEM No.
° Cassette Holder	3-1

1. Remove the spring between the chassis and take-up brake and pull out the take-up brake from the chassis. (See Fig. 2-71)

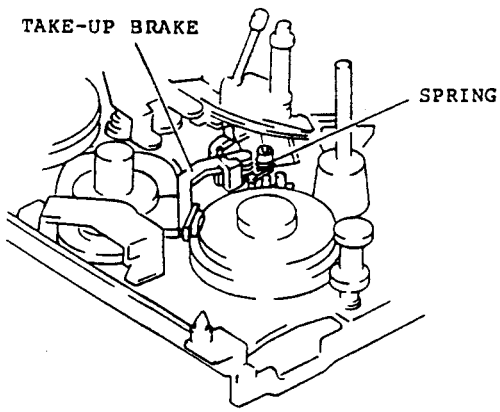


Fig. 2-71

3-16. Supply Reel Disk

ORDER FOR REMOVING PARTS	ITEM No.
° Cassette Holder	3-1

1. Remove one (1) washer holding the supply reel disk. (See Fig. 2-72)
2. Pull out the supply reel disk from the chassis.

Note: When reinstalling the supply reel disk, be sure to install the same number of the same washers between the supply reel disk and chassis as when the unit was shipped from the factory for the height adjustment.

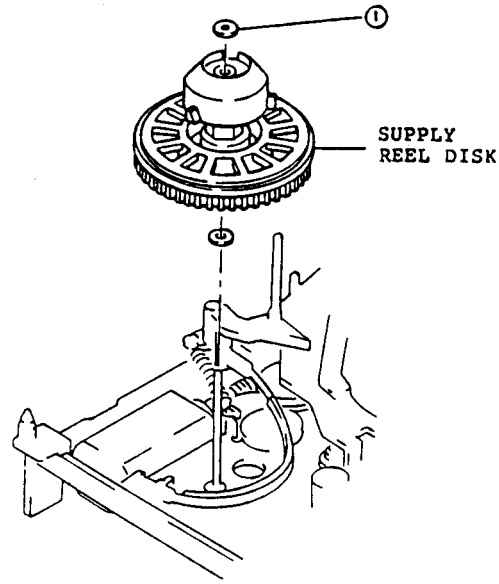


Fig. 2-72

3-17. Take-up Reel Gear

ORDER FOR REMOVING PARTS	ITEM No.
° Cassette Holder	3-1

1. Remove one (1) washer holding the take-up reel gear. (See Fig. 2-73)
2. Pull out the take-up reel gear from the chassis.

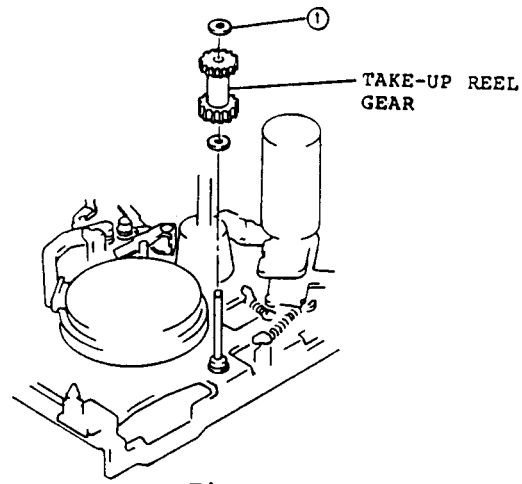


Fig. 2-73

3-18. Take-up Gear

ORDER FOR REMOVING PARTS	ITEM No.
° Cassette Holder	3-1
° Take-up Brake	3-15
° Take-up Reel Gear	3-17

1. Remove one (1) washer holding the the take-up gear. (See Fig. 2-74)
2. Pull out the take-up gear from the chassis.

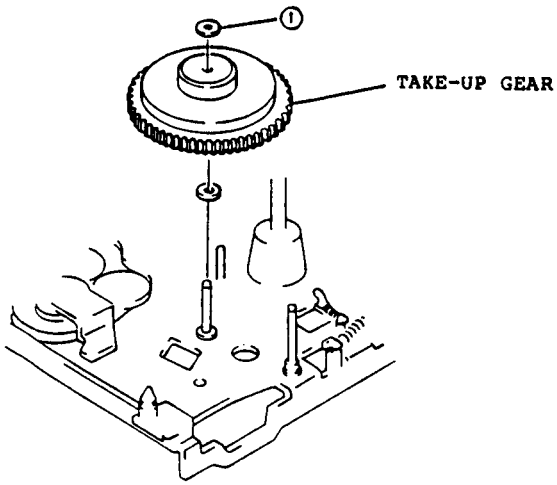


Fig. 2-74

3-19. Tension Arm and Tension Band

ORDER FOR REMOVING PARTS	ITEM No.
° Cassette Holder	3-1
° Supply Reel Disk	3-16

1. Remove the spring between the tension arm and chassis. (See Fig. 2-75)
2. Remove one (1) washer holding the tension arm and one (1) screw holding the tension band.

Note: Adjust as follows after installing the tension arm and tension band.
CHAPTER 3
5-1. TENSION POLE POSITION ADJUSTMENT/TENSION ADJUSTMENT

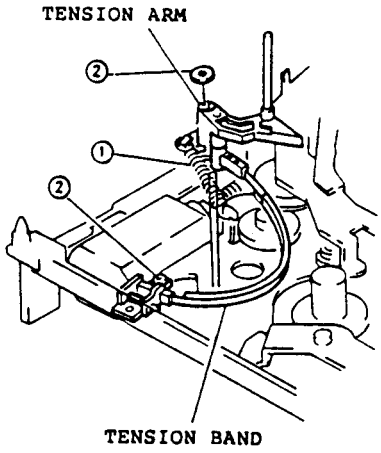


Fig. 2-75

3-20. Centre Gear Block

ORDER FOR REMOVING PARTS	ITEM No.
° Cassette Holder	3-1
° Take-up Brake	3-15
° Supply Reel Disk	3-16

1. Remove the capstan belt. (See Fig. 2-76)
2. Remove two (2) screws holding the centre gear block. (See Fig. 2-77)

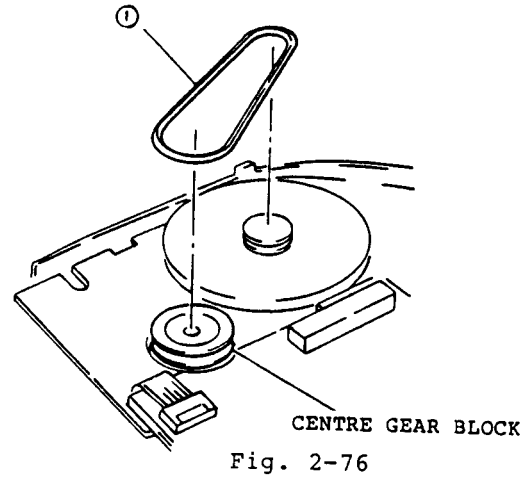


Fig. 2-76

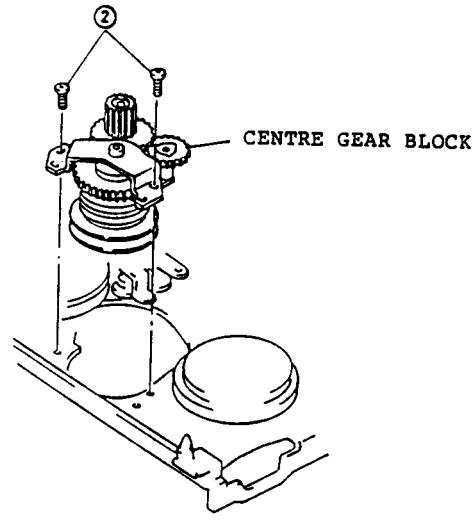


Fig. 2-77

3-21. A/C Head Arm

ORDER FOR REMOVING PARTS	ITEM No.
° A/C Head	3-3
° Dew Sensor	3-6

1. Release the spring between the A/C head arm and chassis. (See Fig. 2-78)
2. Pull out the A/C head arm from the chassis.

Note: Be careful because the spring released in step 2 and a washer below it come off when the A/C head arm is removed.

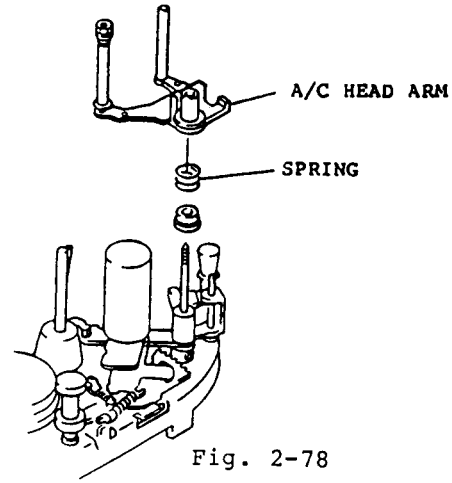


Fig. 2-78

3-22. Middle Guide Arm

ORDER FOR REMOVING PARTS	ITEM No.
° A/C Head	3-3
° Dew Sensor	3-6
° A/C Head Arm	3-21

1. Move the middle guide arm in the direction of the arrow and pull it out the middle guide arm from the chassis. (See Fig. 2-79)

Note: Adjust as follows after installing the middle guide arm.

CHAPTER 3
5-1. MIDDLE GUIDE ARM ASSEMBLING PHASE MARCHING

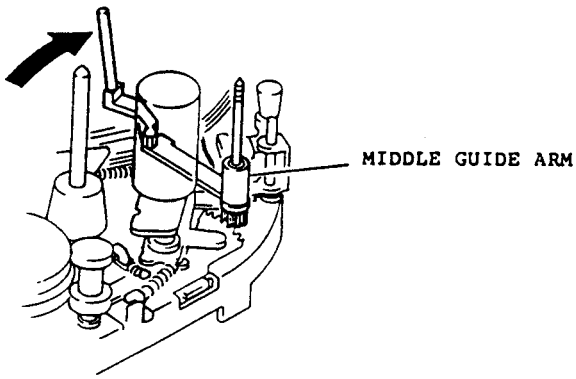


Fig. 2-79

3-23. Pressure Roller

ORDER FOR REMOVING PARTS	ITEM No.
° A/C Head	3-3
° Dew Sensor	3-6
° A/C Head Arm	3-21
° Middle Guide Arm	3-22

1. Release the spring between the pressure roller and chassis. (See Fig. 2-80)
2. Remove two (2) washers holding the pressure roller and pull out the pressure roller from the chassis.

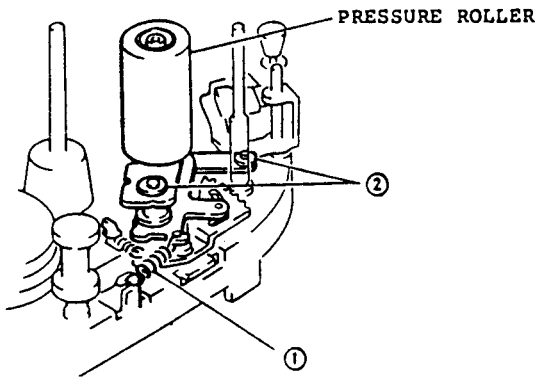


Fig. 2-80

3-24. Supply Guide Roller Base

ORDER FOR REMOVING PARTS	ITEM No.
° Cassette Holder	3-1
° Supply Guide Roller	3-13
° Supply Reel Disk	3-16
° Tension Arm and Tension Band	3-19

1. Remove one (1) washer holding the supply guide roller base. (See Fig. 2-81)

Note: Be careful because the spacer between the washer and supply guide roller and chassis comes off when the supply guide roller base is removed.

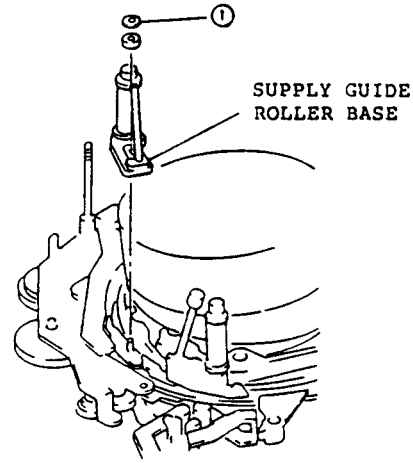


Fig. 2-81

3-25. Take-up Guide Roller Base

ORDER FOR REMOVING PARTS	ITEM No.
° Cassette Holder	3-1
° Take-up Guide Roller	3-14

1. Remove one (1) screw holding the take-up guide roller base holder. (See Fig. 2-82)
2. Remove one (1) washer holding the take-up guide roller base.

Note: Be careful because the guide roller base shaft comes off when the take-up guide roller base is removed.

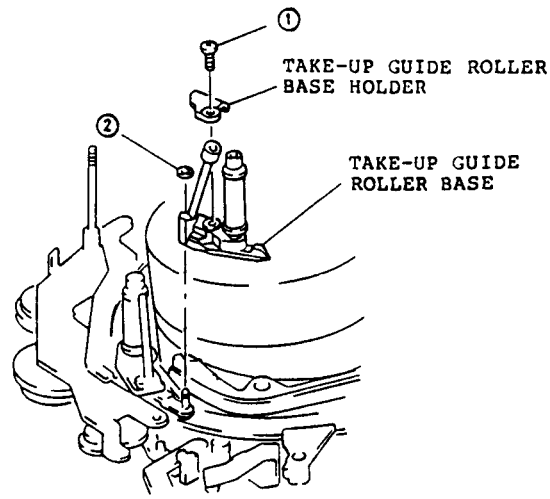


Fig. 2-82

3-26. Supply Guide Roller Rail

ORDER FOR REMOVING PARTS	ITEM No.
° Cassette Holder	3-1
° Impedance Roller	3-11
° Supply Guide Roller	3-13
° Supply Reel Disk	3-16
° Tension Arm and Tension Band	3-19
° Supply Guide Roller Base	3-24

1. Remove two (2) screws holding the supply guide roller rail. (See Fig. 2-83)

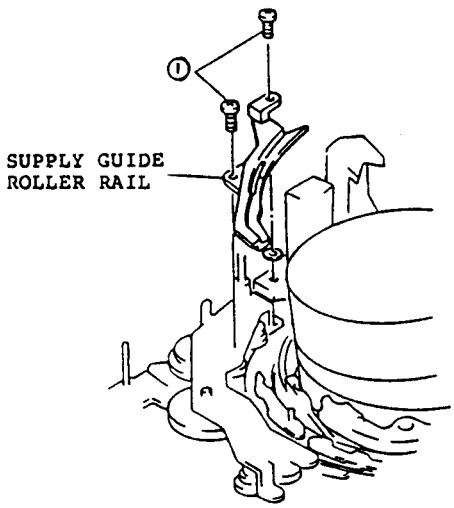


Fig. 2-83

3-27. Loading Gear Block

ORDER FOR REMOVING PARTS	ITEM No.
° Cassette Holder	3-1
° Impedance Roller	3-11
° Supply Guide Roller	3-13
° Supply Reel Disk	3-16
° Tension Arm and Tension Band	3-19
° Supply Guide Roller Base	3-24
° Supply Guide Roller Rail	3-26

1. Remove two (2) screws holding the loading gear block. (See Fig. 2-84)

Note: Adjust as follows after installing the loading gear block.

CHAPTER 3

1. PHASE MATCHING OF TAKE-UP/SUPPLY LOADING RINGS AND LOADING GEAR BLOCK IN ASSEMBLY.

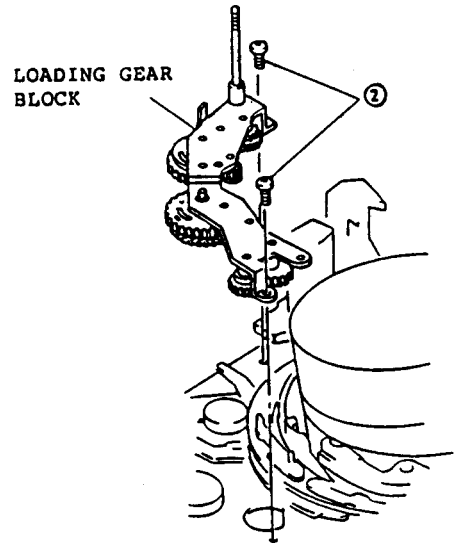


Fig. 2-84

3-28. Take-up Loading Ring Holders (1)/(2)

ORDER FOR REMOVING PARTS	ITEM No.
° A/C Head	3-3
° Dew Sensor	3-6
° A/C Head Arm	3-21
° Middle Guide Arm	3-22

1. Remove one (1) screw holding the take-up loading ring holder (2). (See Fig. 2-85)
2. Remove one (1) screw holding the take-up loading ring holder (1).

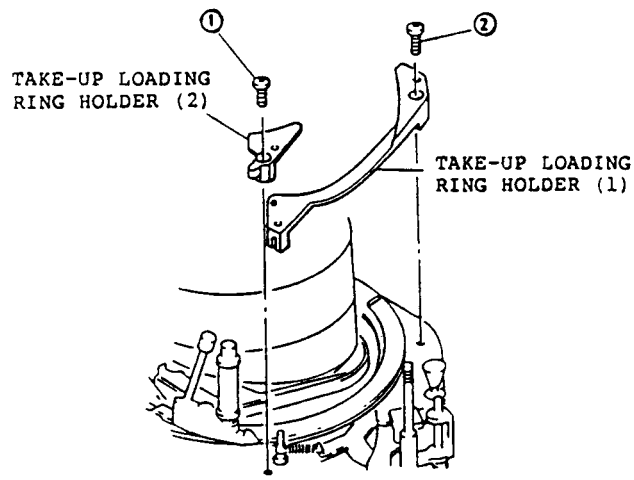


Fig. 2-85

3-29. Supply Loading Ring Holder

ORDER FOR REMOVING PARTS	ITEM No.
° Cassette Holder	3-1
° Cylinder	3-2
° Impedance Roller	3-11
° Supply Guide Roller	3-13
° Supply Reel Disk	3-16
° Tension Arm and Tension Band	3-19
° Supply Guide Roller Base	3-24

1. Remove two (2) screws holding the supply loading ring holder. (See Fig. 2-86)

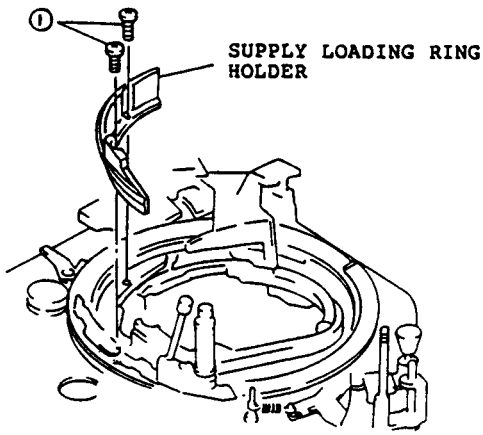


Fig. 2-86

3-30. Take-up Guide Roller Rail

ORDER FOR REMOVING PARTS	ITEM No.
° Cassette Holder	3-1
° Cylinder	3-2
° Take-up Guide Roller	3-14
° Take-up Guide Roller Base	3-25

1. Remove three (3) screws holding the take-up guide roller rail. (See Fig. 2-87)

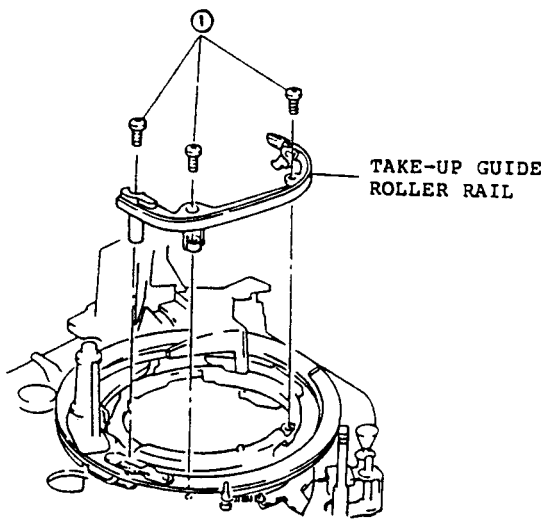


Fig. 2-87

3-31. Loading Gear (2)

ORDER FOR REMOVING PARTS	ITEM No.
° Cassette Holder	3-1
° Impedance Roller	3-11
° Supply Guide Roller	3-13
° Supply Reel Disk	3-16
° Tension Arm and Tension Band	3-19
° Supply Guide Roller Base	3-24
° Supply Guide Roller Rail	3-26
° Loading Gear Block	3-27

1. Remove one (1) washer holding the loading gear (2). (See Fig. 2-88)

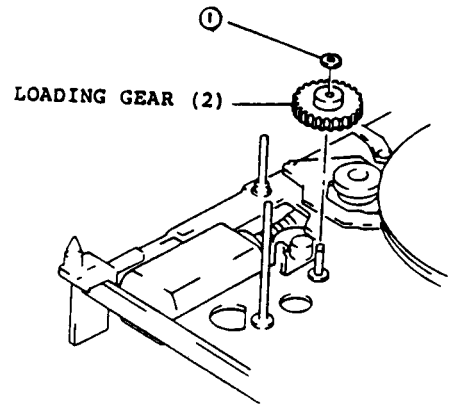


Fig. 2-88

3-32. Supply Loading Ring

ORDER FOR REMOVING PARTS	ITEM No.
° Cassette Holder	3-1
° A/C Head	3-3
° Dew Sensor	3-6
° Impedance Roller	3-11
° Supply Guide Roller	3-13
° Supply Reel Disk	3-16
° Tension Arm and Tension Band	3-19
° A/C Head Arm	3-21
° Middle Guide Arm	3-22
° Supply Guide Roller Base	3-24
° Supply Guide Roller Rail	3-26
° Loading Gear Block	3-27
° Take-up Loading Ring Holders (1)/(2)	3-28

1. Remove the supply loading ring from the chassis. (See Fig. 2-89)

Note: Adjust as follows after installing the supply loading ring.

CHAPTER 3

1. PHASE MATCHING OF TAKE-UP/SUPPLY LOADING RINGS AND LOADING GEAR BLOCK IN ASSEMBLY.

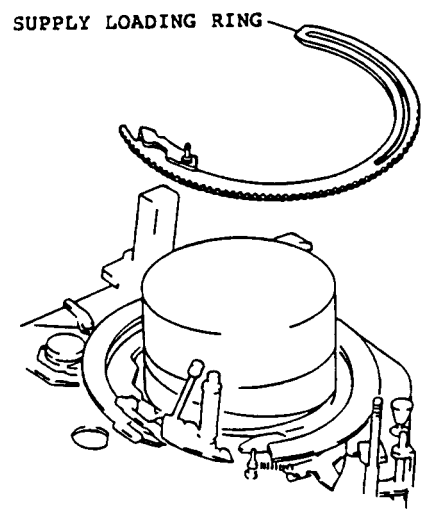


Fig. 2-89

3-33. Take-up Loading Ring

ORDER FOR REMOVING PARTS	ITEM No.
° Cassette Holder	3-1
° A/C Head	3-3
° Dew Sensor	3-6
° Impedance Roller	3-11
° Supply Guide Roller	3-13
° Take-up Guide Roller	3-14
° Supply Reel Disk	3-16
° Tension Arm and Tension Band	3-19
° A/C Head Arm	3-21
° Middle Guide Arm	3-22
° Supply Guide Roller Base	3-24
° Take-up Guide Roller Base	3-25
° Supply Guide Roller Rail	3-26
° Loading Gear Block	3-27
° Take-up Loading Ring Holders (1)/(2)	3-28
° Supply Loading Ring Holder	3-29
° Take-up Guide Roller Rail	3-30
° Supply Loading Ring	3-32

1. Remove one (1) screw holding the take-up loading ring holder (3). (See Fig. 2-90)
2. Remove the take-up loading ring from the chassis.

Note: Adjust as follows after installing the take-up loading ring.

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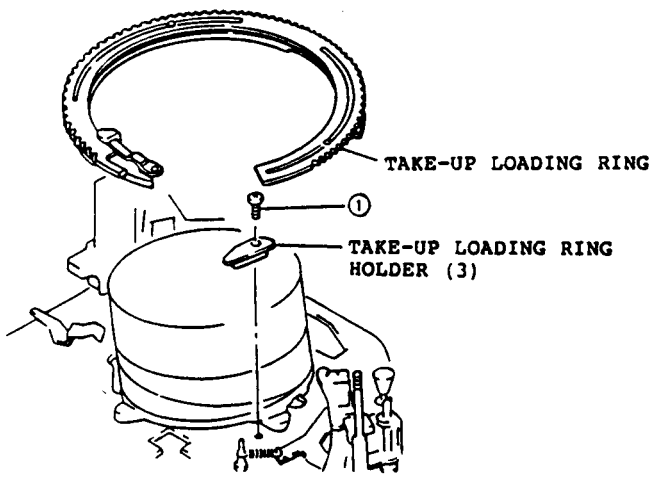


Fig. 2-90

3-34. Catcher Block

ORDER FOR REMOVING PARTS	ITEM No.
° Supply Loading Ring	3-32
° Take-up Loading Ring	3-33

1. Remove two (2) screws holding the catcher block. (See Fig. 2-91)

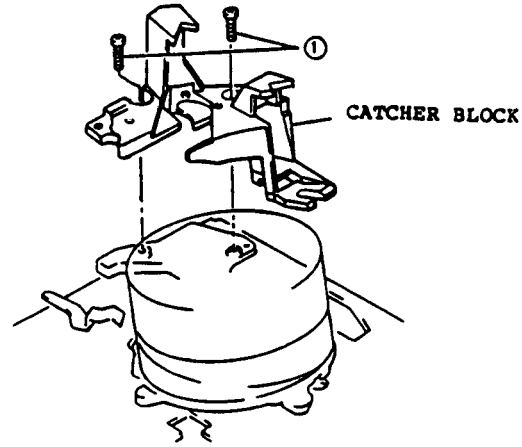


Fig. 2-91

3-35. Cylinder Base

ORDER FOR REMOVING PARTS	ITEM No.
° Cylinder	3-2
° Supply Loading Ring	3-32
° Take-up Loading Ring	3-33
° Catcher Block	3-34

1. Remove three (3) screws holding the cylinder base. (See Fig. 2-92)

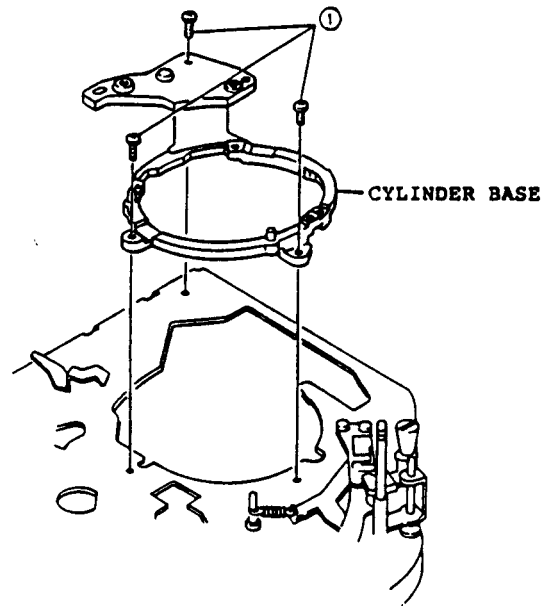


Fig. 2-92

3-36. Synchro Gear

ORDER FOR REMOVING PARTS	ITEM No.
° Supply Loading Ring	3-32
° Take-up Loading Ring	3-33

1. Remove one (1) washer holding the synchro gear. (See Fig. 2-93)

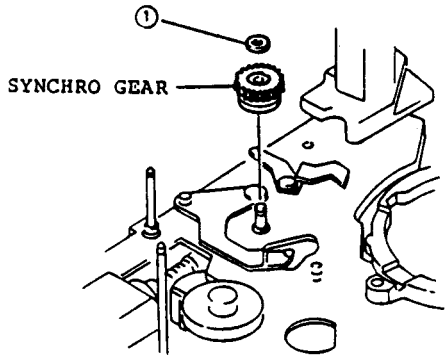


Fig. 2-93

3-37. Pressure Roller Arm and Pressure Roller Control Arm

ORDER FOR REMOVING PARTS	ITEM No.
° Supply Loading Ring	3-32
° Take-up Loading Ring	3-33

1. Turn the X-value adjustment nut counterclockwise to remove it from the chassis. (See Fig. 2-94)
2. Remove one (1) washer holding the pressure roller arm.
3. Remove one (1) washer holding the pressure roller control arm.
4. Pull out the pressure roller arm and pressure roller control arm from the chassis.

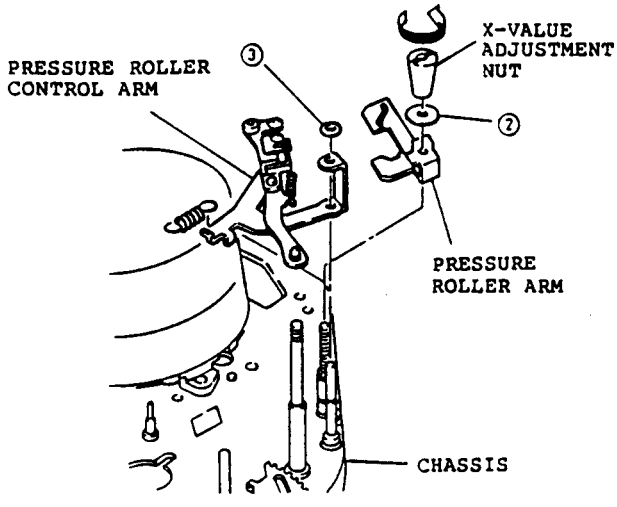


Fig. 2-94

4. LENS BLOCK REMOVAL

ORDER FOR REMOVING PARTS	ITEM No.
° Camera Bottom Case	2-1
° Camera Block	2-2
° Process Circuit Board	2-5
° DC-DC Converter, Auto Focus Circuit Board	2-6
° Control (1) and (2) Circuit Board	2-7
° IC002	2-8

4-1. Lens Block

1. Remove two (2) screws holding the sensor shield case. (See Fig. 2-101)
2. Remove two (2) screws and remove the DC-DC converter holder in the direction of the arrow.
3. Remove one (1) screw holding the control circuit board holder.

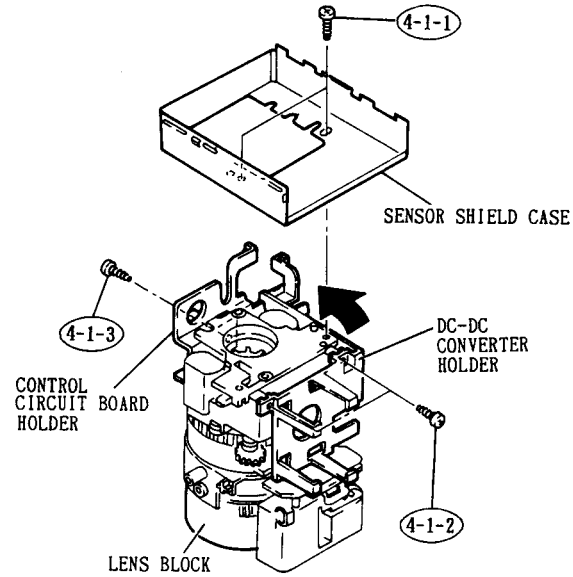


Fig. 2-101

4-2. Zoom Motor Block

ORDER FOR REMOVING PARTS	ITEM No.
° Lens Block	4-1

1. Remove one (1) screw holding the zoom motor. (See Fig. 2-102)
2. Turn the zoom motor block in the direction of arrow (A) by 180° using the gear shaft as a pivot.
3. Remove the zoom motor block in the direction of arrow (B).

Note: Reinstall the zoom motor block by the reverse procedure to removal

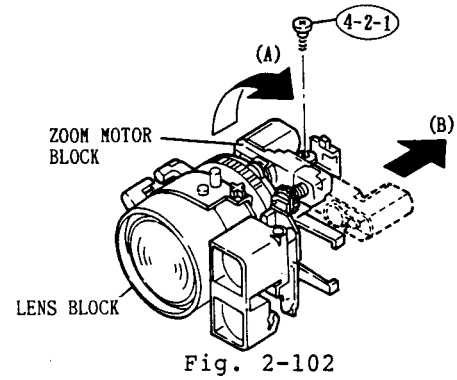


Fig. 2-102

4-3. Focus Motor Block

ORDER FOR REMOVING PARTS	ITEM No.
∘ Lens Block	4-1

1. Remove one (1) screw and remove the focus motor block in the direction of the arrow. (See Fig. 2-103)

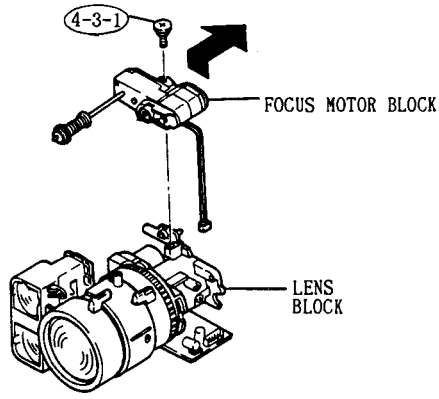


Fig. 2-103

4-4. Iris Motor Block

ORDER FOR REMOVING PARTS	ITEM No.
∘ Lens Block	4-1

1. Peel out the iris tape and remove the iris block in the direction of the arrow. (See Fig. 2-104)

Note: Move the relay (backfocus) lens backwards when removing the iris block.
Take great care that no dust adheres to the iris block and do not scratch it.
Do not re-use the iris tape once it has been peeled off.
Be sure to perform the backfocus adjustment after installing the iris block.

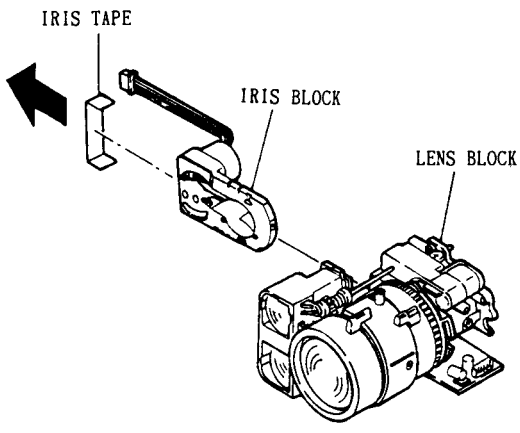


Fig. 2-104

4-5. AF Block

ORDER FOR REMOVING PARTS	ITEM No.
∘ Lens Block	4-1

1. Remove two (2) screws holding the AF block. (See Fig. 2-105)

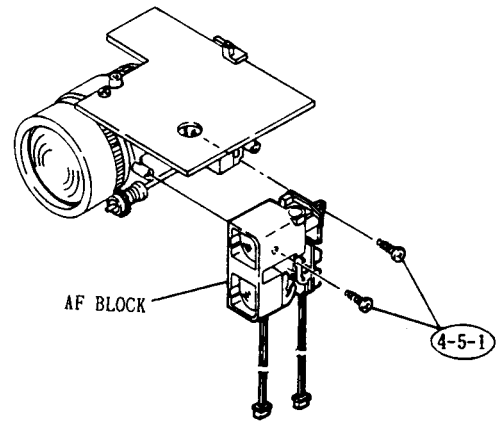


Fig. 2-105

4-6. Zoom Lens Block, Index Ring

ORDER FOR REMOVING PARTS	ITEM No.
∘ Lens Block	4-1
∘ Zoom Motor Block	4-2
∘ Focus Motor Block	4-3
∘ Iris Block	4-4

1. Set the zoom ring to the telephoto end and turn the focus ring to the infinity end. (See Fig. 2-106)
2. Remove one (1) screw holding the index ring.
3. Turn the index ring in the direction of the arrow to release one (1) tab.
4. Release one (1) tab holding the index ring. (See Fig. 2-107)

Note: Be careful not to damage the zoom ring or focus ring when removing the index ring.

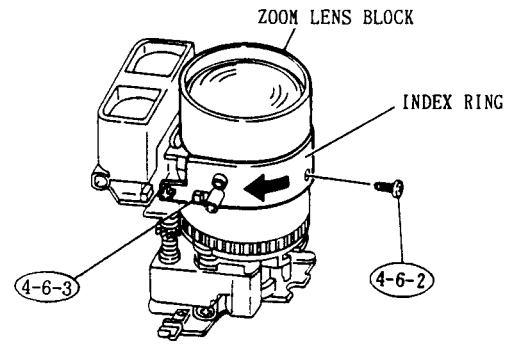


Fig. 2-106

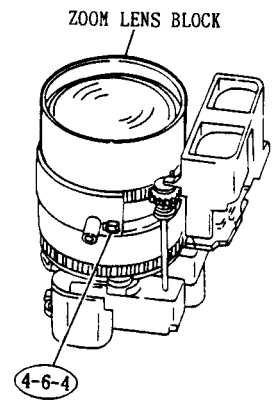


Fig. 2-107

5. ELECTRONIC VIEWFINDER (EVF) BLOCK REMOVAL

ORDER FOR REMOVING PARTS	ITEM No.
∘ Eye Cup	1-2
∘ EVF Block	1-4

5-1. Electronic Viewfinder (EVF) Circuit Board

1. Remove the CRT holder in the direction of arrow (A). (See Fig. 2-151)
2. Open section (B) of the EVF case in the direction of arrow (C) and remove the CRT and EVF circuit board from the EVF case.
3. Disconnect CRT socket and connecter CN801 on the EVF circuit board. (See Fig. 2-152)

Note: When installing the EVF circuit board, lay out the wires from the flyback transformer so they are in the very top position.

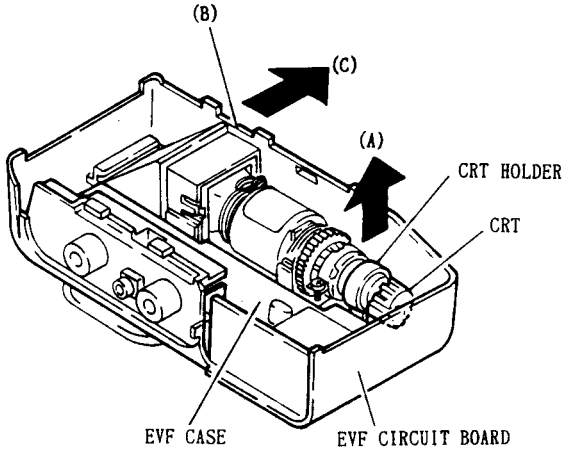


Fig. 2-151

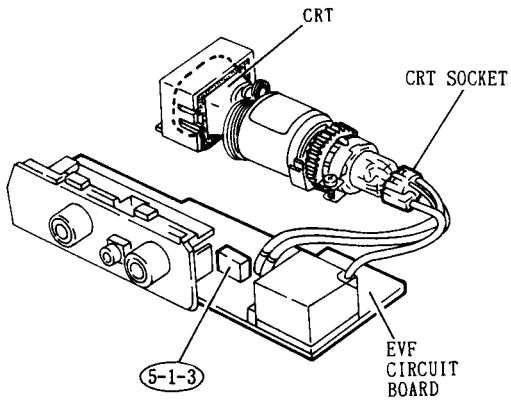


Fig. 2-152

5-2. CRT

ORDER FOR REMOVING PARTS	ITEM No.
∘ EVF Circuit Board	5-1

1. Release two (2) tabs and pull out the CRT from the CRT frame. The CRT rubber will come of at this time. (See Fig. 2-153)

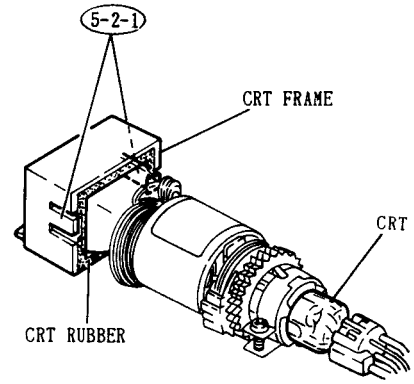
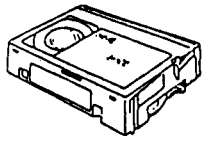
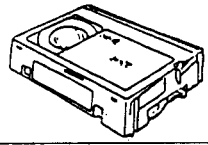
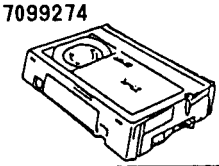
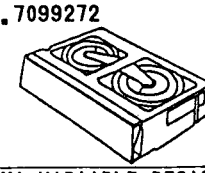
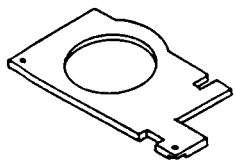
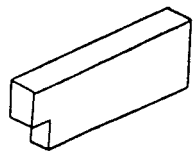
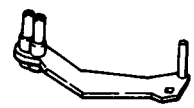
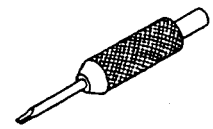
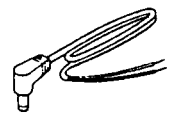
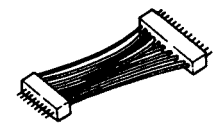
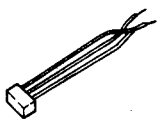
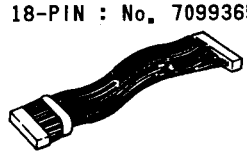
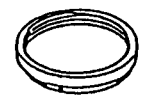


Fig. 2-153

6. TABLE OF FLAT PACKAGE ICS,/ SOLDERING IRON TIPS

SYMBOL No	DESCRIPTION	IRON TIP -No
CAMERA SECTION		
IC113	NJM2256M	12
IC114	74HC126	13
IC115	74HC132	13
IC116	74HC14	13
IC117	NJM311	14
EVF SECTION		
IC801	HA118121	13
VTR SECTION		
IC203	TL8809F	14
IC204	NJM2228M	14
IC301	MM1002	13
IC401	BA7757BK	10
IC601	HD49743	6
IC751	BA6454FO	11
IC753	LM2903M	14
IC801	HD404439	7
IC802	MH1018BF	14

JIGS AND TAPES FOR ADJUSTMENT

1. ALIGNMENT TAPE (50HMBE-3C) COLOUR BAR/NONE No. 7099280 	2. ALIGNMENT TAPE (HMAE-3C) NONE/1kHz No. 7099281 	3. ALIGNMENT TAPE (50HMPE-3C) MONOSCOPE/7kHz No. 7099274 	4. BACKTENSION/PLAY TORQUE METER No.7099272 
5. MASTER PLANE No. 7099313 	6. HEIGHT JIG No. 7099259 	7. REEL GEAR INSTALLATION JIG No. 7099373 	8. SEMI-VARIABLE RESISTOR ADJ. DRIVER No. 7099315 
9. 0.7/1.27/2.0mm HEXAGONAL WRENCHES 0.7mm : No. 7099316 1.27mm : No. 7099329	10. BACKFOCUS ADJUSTMENT DRIVER No. 7099370	11. EXTENSION POWER CABLE No. 7099368 	12. 11-PIN EXTENSION CABLE No. 7099367 
13. 3-PIN EXTENSION CABLE No. 7099366 	14. EXTENSION CABLE 30-PIN : No. 7099364 18-PIN : No. 7099365 	15. STEP UP RING (37mmϕ ⇒ 46mmϕ) No. 7029086	16. LIGHT BALANCING FILTER C12 : No. 7099369 

USE OF NEW JIGS AND TOOLS

No.	NAME OF JIG & TOOLS	PARTS No.	HOW TO USE (PURPOSE OF USE)
10	Backfocus Adjustment Driver	7099370	·Used to adjust the Backfocus of the camera section. ·As the lens made smaller, the diameter of the Backfocus adjustment hole been made smaller.
11	Extension Power Cable	7099368	·Cable to supply power to the camera/recorder. ·Since the power voltage has been changed from DC9.6V to DC6V, the diameter of the jack is also changed. ·The wire with a white line is negative (-).
12	11-Pin Extension Cable	7099367	·Used to adjust the camera section. ·Insert the connector with the narrower pin intervals into the specified position of the process circuit board to use it as a test point (TP101) show in "Camera section adjustment".
13	3-Pin Extension Cable	7099366	·Used to check the VTR operation (in modes other than recording) when the camera section is separated. ·Connect this to PG981 on the main circuit board and apply DC6V to check the VTR operation (in modes other than recording). (Shout pins 1 and 2 of PG806 on the main circuit board to set the unit to the record mode (no-signal recording for video and audio)with the camera section separated.) ·The brown and orange wires are the positive (+) and the red wire is the negative (-).
14	30-Pin Extension Cable	7099364	·Extension cable to be used between the main circuit board (PG801) and motor drive circuit board (CN751). (See Fig. 4-101 on page 4-8)
	18-Pin Extension Cable	7099365	·Extension cable to be used between the autofocus circuit board (PG302) and process circuit board (PG102). (See Fig. 4-2 on page 4-1)

No.	NAME OF JIG & TOOLS	PARTS No.	HOW TO USE (PURPOSE OF USE)
			·Extension cable to be used between the IC002 (PG001 on the sensor/pre-process) and process circuit board (PG101). (See Fig. 4-2 on page 4-1)
15	Step Up Ring (37mmϕ → 46mmϕ)	7029086	·To attach a 46mm dia. C12 light balancing filter over the VM-C1E (lens dia. : 37mm)
16	C12 Light Balancing Filter	7099369	·Use adjust the camera section. ·When this filter is attached over the lens and the camera is pointed at a light box (chart) of 3100K, the same effect as when pointing at a light box of 5100K is obtained.

CHAPTER 3

MECHANICAL ADJUSTMENT

1. PHASE MATCHING OF TAKE-UP/SUPPLY LOADING RINGS AND LOADING GEAR BLOCK IN ASSEMBLY (Figs. 3-1, 3-2, 3-3)

Always perform this adjustment when reinstalling the take-up/supply loading rings and loading gear block.

1) Install the take-up loading ring so that the space between the right edge of the take-up loading ring and pressure roller control arm is 0.5mm. (See Fig. 3-1)
2) Align the right end of the groove in the take-up loading ring with hole (B) in the multi-cam slider.
3) Insert a pin into hole (A) and stick it into the chassis at right angles.
4) Set gear (2), gear (3) and gear (8) of the loading gear block as shown in Fig. 3-2 (A).
5) Attach the loading gear installation jig to the loading gear block in the state set in step 4) as shown in Fig. 3-2 (B).
6) Assemble the loading gear block with the jig attached in the chassis so that hole (C) in the take-up loading ring and the recess of gear (8) are aligned and marking (A) on the take-up loading ring and marking (B) on gear (2) are aligned. (See Fig. 3-1)
7) Remove the pin and loading gear installation jig.
8) Assemble the supply loading ring into the chassis so that marking (C) on the supply loading ring and marking (D) on gear (3) are aligned. (See Fig. 3-3)

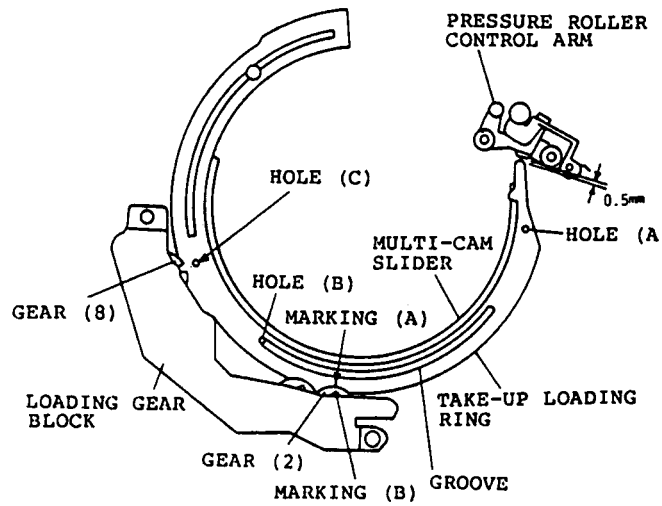


Fig. 3-1

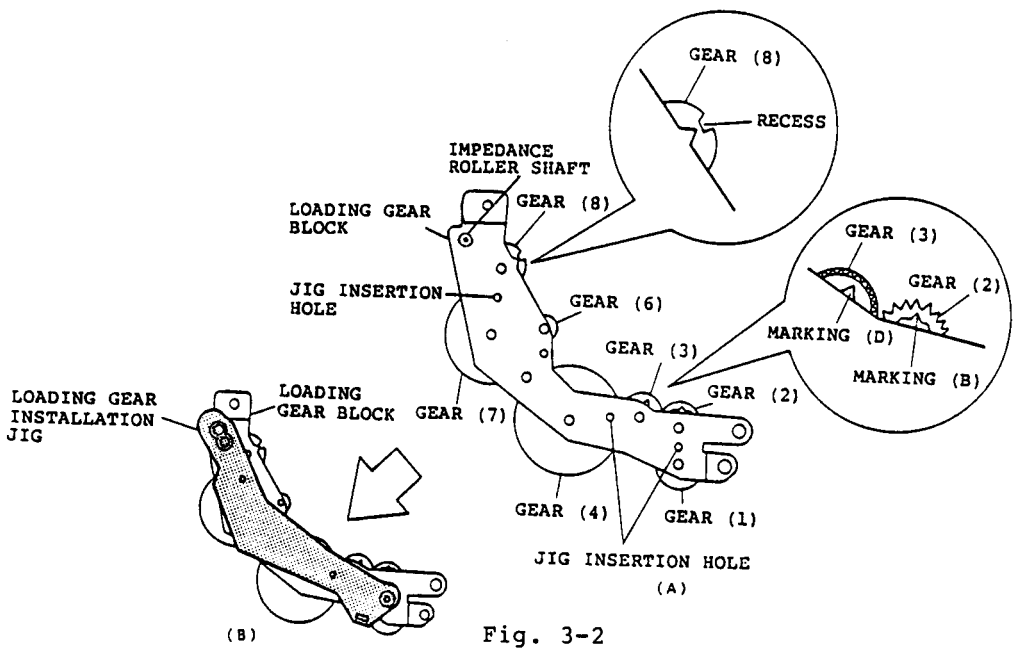


Fig. 3-2

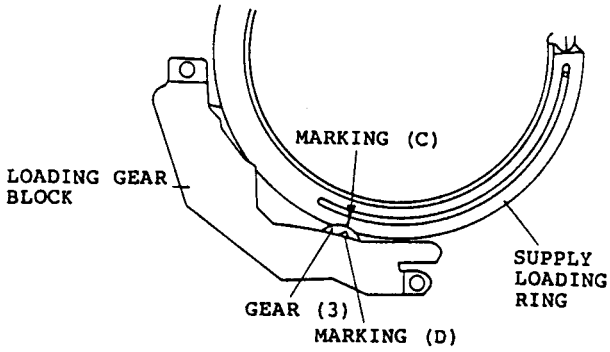


Fig. 3-3

2. MECHANISM STATE SWITCH PHASE MATCHING IN ASSEMBLY (Figs. 3-4, 3-5)

Always perform this adjustment when reinstalling the mechanism state switch after checking that the take-up/supply loading rings and loading gear block are set to the positions installed in item 1.

1) Align hole (A) in the mechanism state switch holder and marking (A) on the rotor. (See Fig. 3-4)
2) Assemble the mechanism state switch into the chassis in the conditions set in step 1). (See Fig. 3-5)

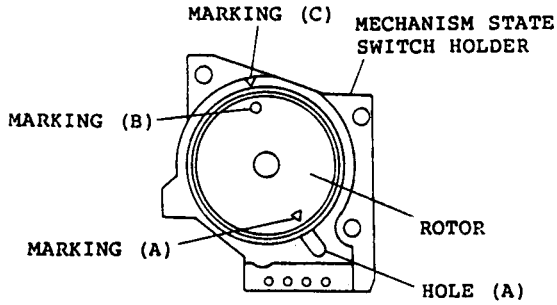


Fig. 3-4

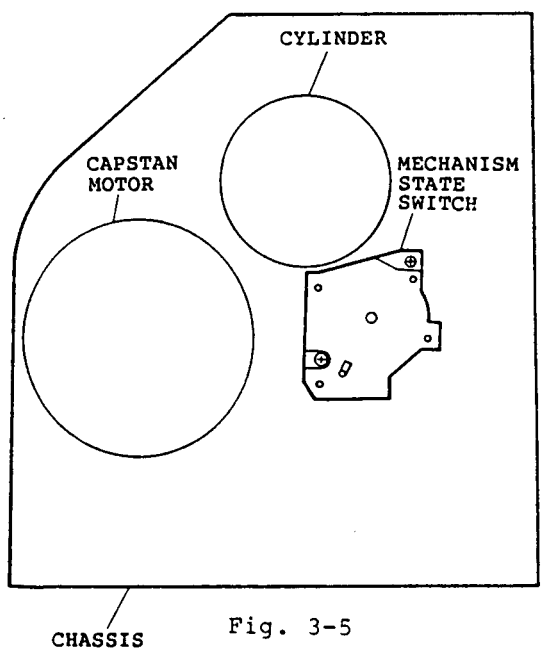


Fig. 3-5

3. CONFIRMATION OF UNLOADING POSITION (Fig. 3-6)

Always perform this confirmation after reinstalling the take-up/supply loading rings, loading gear block and mechanism state switch.

1) After performing loading and unloading several times, set the unit to the unloading (stop) state and check that marking (A) on the take-up guide roller rail and the center of take-up guide roller base holder are approximately aligned, and marking (B) on the supply loading ring holder and marking (C) on the supply guide roller base are also aligned. (See Fig. 3-6)
2) If the above conditions are not satisfied, match the phase of the take-up/supply loading rings and loading gear block and the phase of the mechanism state switch again.

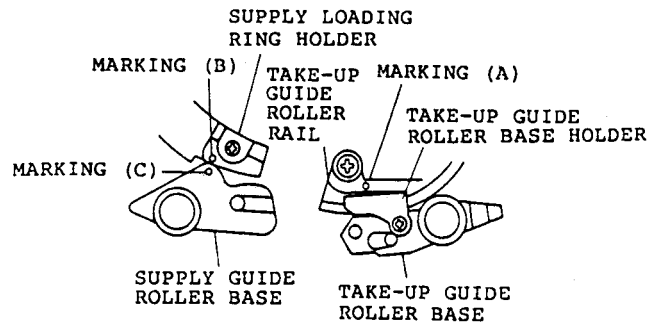


Fig. 3-6

4. MIDDLE GUIDE ARM ASSEMBLING PHASE MATCHING (Fig. 3-7)

Always perform this adjustment when reinstalling the middle guide arm.

1) Assemble the middle guide arm into the chassis so that marking (A) on the arm and marking (B) on the pressure roller gear are aligned.

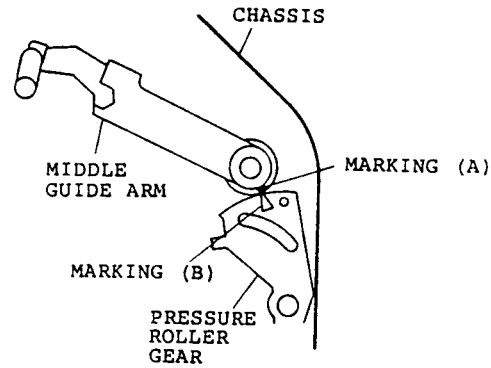


Fig. 3-7

5. TAPE TRANSPORT SYSTEM COMPONENTS CHECK/ADJUSTMENT

The tape transport system is the path from the supply reel disk to the take-up reel gear via the video heads. The tape transport components, especially the

components that come into direct contact with tape, must be kept clean without damage, dust, oil, etc. adhering to contact surfaces. The tape transport system is adjusted before shipment from the factory, so that only when any transport components are replaced, their checking and adjustment are necessary. Confirm the following three items before performing checks and adjustments.

1) Check that the same number of the same washers as when the unit is shipped from the factory are between the supply reel disk and chassis.
2) Check that two specified washers (0.25 mm and 0.13 mm thick) are between the impedance roller and chassis. Also check that the nut on the impedance roller is tightened firmly.
3) Check that the cylinder brush is in contact with the approximate centre of the cylinder shaft.

5-1. TENSION POLE POSITION ADJUSTMENT/ TENSION ADJUSTMENT (Fig. 3-8)

Tension Pole Position Adjustment

1) Load a blank tape and set the unit to the play mode. (Rewind the tape completely before loading it.)
2) Adjust screw (A) so that the inner flange of the tension arm is aligned with the centre of hole A in the loading gear block at the start of tape as shown in Fig. 3-8.

Tension Adjustment

1) Load the back-tension/play torque meter and set the unit to the play mode.

Note: When the back-tension/play torque meter is viewed from above, the left meter indicates back-tension torque.

2) Check that the back-tension torque is between 18 and 26 g-cm.
3) If the measurement value is outside the above specification, check the tension pole position and then clean the supply reel disk and replace the tension band.

Note: After adjustment is completed, fix screw (A) with lock paint.

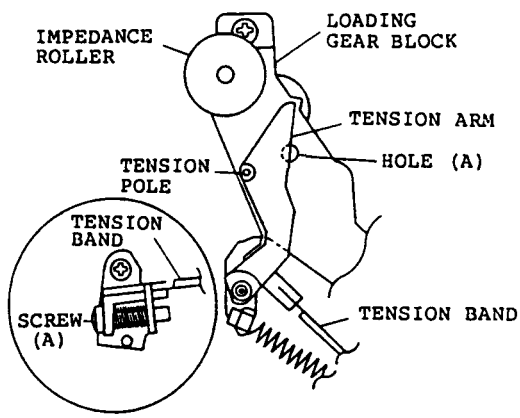


Fig. 3-8

5-2. TAKE-UP GUIDE POLE HEIGHT ADJUSTMENT (Fig. 3-9)

Note: As the take-up guide pole provides a reference for the tape transport system, do not adjust it without sufficient reason.

1) Place the master plane on the cassette holder and lower the cassette holder.
2) Mount the height jig on the master plane and fit it to the guide pole.
3) Adjust the guide pole height adjustment nut so that the bottom edge of the upper flange of the take-up guide pole and the top edge of the height jig are aligned.
4) Run the tape and check that no curling or creasing occurs. If it occurs, readjust the height adjustment nut.

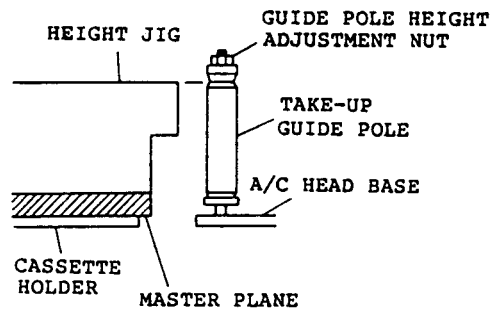


Fig. 3-9

5-3. GUIDE ROLLER HEIGHT ADJUSTMENT (Figs. 3-10, 3-11)

Rough Adjustment

1) Place the master plane on the cassette holder and lower the cassette holder.
2) Mount the height jig on the master plane and fit it to the supply guide roller.
3) Loosen the hexagonal screw (0.7 mm) holding the supply guide roller. (See Fig. 3-10)
4) Adjust the hexagonal screw (2.0 mm) using a hexagonal wrench so that the bottom edge of the upper flange of the supply guide roller and the top edge of the height jig are aligned.
5) Roughly adjust the take-up guide roller roughly in the same way.

Note: After this rough adjustment is completed, always perform the following precise adjustment.

Precise Adjustment

6) Complete the guide roller height rough adjustment.
7) Connect an oscilloscope to TP203 on the main circuit board.
8) Synchronize the oscilloscope with TP201 (SW25) on the main circuit board.
9) Set the TRACKING control to the centre click position.
10) Playback the alignment tape (50HMPE-3C).

11) Check that the FM waveform is flat.
12) Then check that the FM drops at the start and end of the envelope are equal when the TRACKING control is turned to the left and right.
13) If the above item cannot be confirmed, loosen the hexagonal screws (0.7mm) holding the supply and take-up guide rollers, and fine adjust the height of both guide rollers so the FM waveform is flat and the FM drops at the start and end of the envelope are equal when the TRACKING control is turned to the left and right.

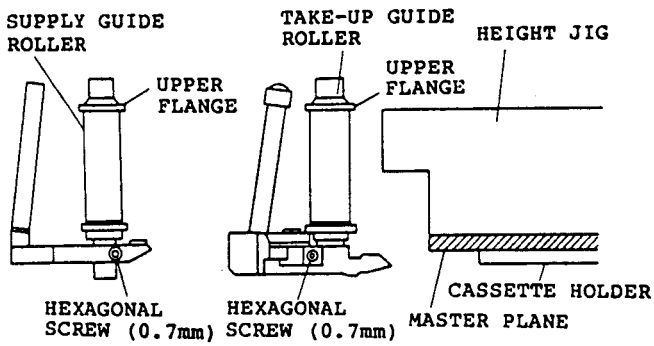
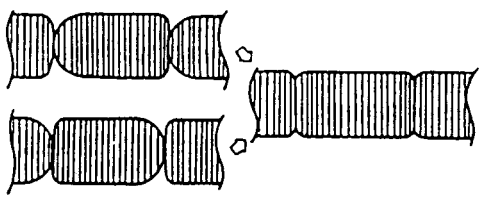


Fig. 3-10



Turn guide roller height adjustment screw a little at a time to flatten waveform

Tracking control at centred

Turn the tracking control to the left and right

FM OUTPUT

Fig. 3-11

5-4. A/C HEAD ADJUSTMENT

(Figs. 3-12, 3-13, 3-14, 3-15)

Perform the height, tilt, azimuth and X-value adjustments in this item. When the A/C head is reinstalled, perform the height, tilt and azimuth adjustments repeatedly to determine the A/C head installation position, then perform the X-value adjustment.

Always perform rough adjustment first and then precise adjustment. If the A/C head adjustment is not performed, the middle guide arm strikes against the A/C head and the loading state is not obtained.

Rough Adjustment

1) Place the master plane on the cassette holder and lower the cassette holder.
2) Adjust the height adjustment nut so that the top of the master plane is 2.0 ± 0.2 mm higher than the A/C head base. (See Fig. 3-12)
3) Adjust screws (A), (B) and (C) so that there is 2.0 ± 0.2 mm between the bottom edges of the A/C head plate and A/C head base, and the A/C head is at right angles to the A/C head base.

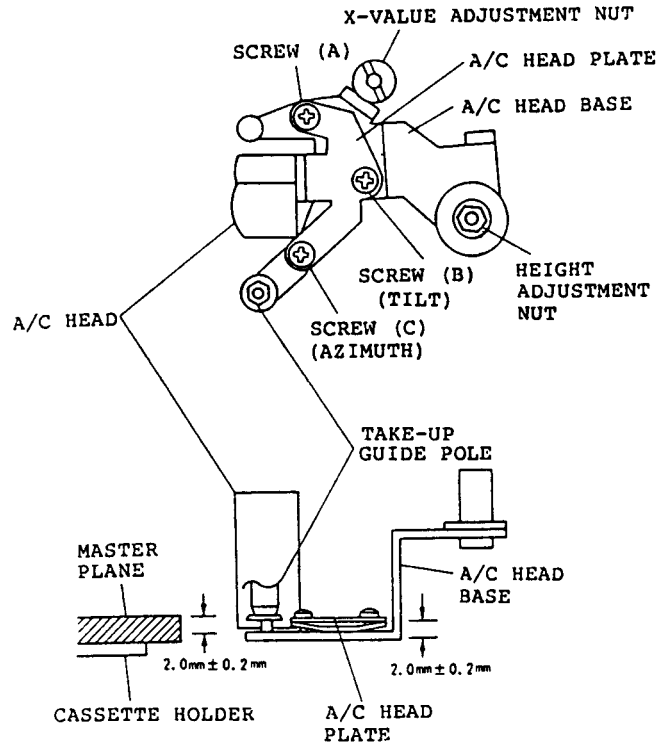


Fig. 3-12

Precise Adjustment

4) Connect an oscilloscope to the audio output jack.
5) Playback the alignment tape (50HMPE-3C).
6) Adjust screws (A), (B) and (C) so that the audio output is maximum and flat (without fluctuations). (See Figs. 3-12, 3-13)

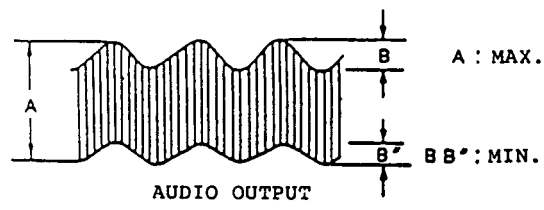


Fig. 3-13

X-Value Adjustment

7) Connect an oscilloscope to TP203 on the main circuit board.
8) Synchronize the oscilloscope with TP201 (SW25) on the main circuit board.
9) Playback the alignment tape (50HMPE-3C).

10) Turn the TRACKING control to the clockeise and counter clockwise from the centre click position and check that the FM output is maximum at the centre position and starts to drop at the same gradient on the clockwise and counter clockwise. If the above conditions are satisfied, the X-value adjustment is correct.
(See Figs. 3-14, 3-15)

11) If the above conditions are not satisfied, adjust the X-value adjustment nut using a flat-bladed screwdriver, etc. so that the FM output is maximum when the TRACKING control is set to the centre click position and it starts to drop when the control is turned to the clockwise and counter clockwise at the same angle.

12) Check step 9) again.

Note: After adjustment is completed, adjust the audio bias level in 3. VTR SECTION ADJUSTMENT in ELECTRICAL ADJUSTMENT.

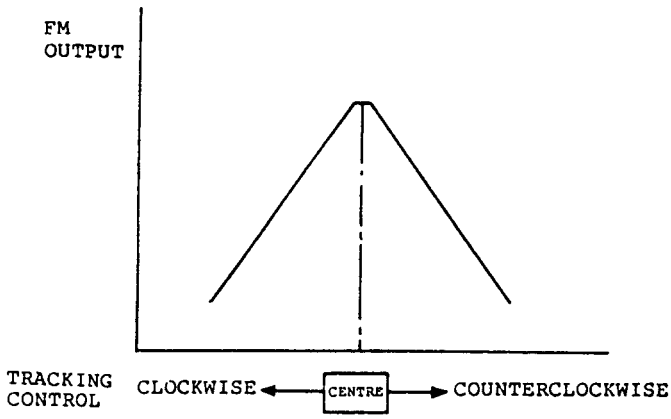


Fig. 3-14

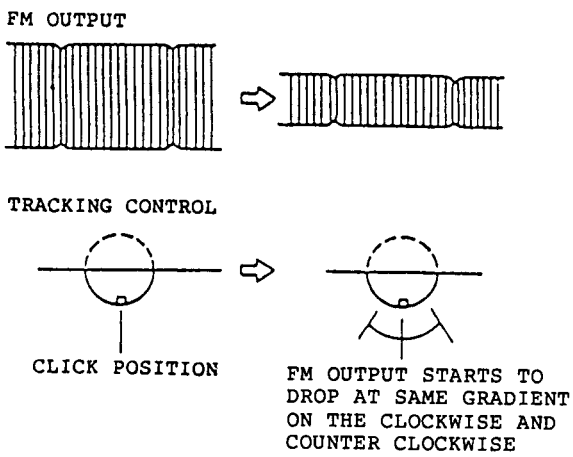

FM OUTPUT
TRACKING CONTROL
CLICK POSITION
FM OUTPUT STARTS TO DROP AT SAME GRADIENT ON THE CLOCKWISE AND COUNTER CLOCKWISE

Fig. 3-15

6. ADJUSTMENT AFTER REPLACING CYLINDER (VIDEO HEADS) (Fig. 3-16)

When the cylinder is replaced, the relative height of the cylinder and guide roller, and the X-value, etc. drift (the drift is very small when the cylinder is replaced correctly), so that the tape transport system and servo system must be adjusted. Perform check and adjustment following the order below.

1) Load a blank tape and playback it. Check that no curling or creasing occurs around the guide rollers. If it does, fine adjust the height of the guide rollers.
2) Check that the FM output is flat without level fluctuations. If it cannot be checked, adjust the height of the guide rollers. Refer to the following item for how to check the flatness.
3) Perform check and adjustment of the head switching point. Refer to 3. VTR SECTION ADJUSTMENT in ELECTRICAL ADJUSTMENT for the adjustment method.
4) Check that the X-value adjustment is correct. (If it cannot be checked, do not adjust the X-value.)
   If it can be checked, proceed to step 7).
   If it cannot be checked, proceed to step 5).
5) Perform check and adjustment of the tracking preset. Refer to 3. VTR SECTION ADJUSTMENT in ELECTRICAL ADJUSTMENT for the adjustment method.
6) Perform the X-value adjustment.
7) Perform the following adjustments, referring to 3. VTR SECTION ADJUSTMENT in ELECTRICAL ADJUSTMENT.
   - Record Luma/Chroma Level Adjustment

<u>Checking the Flatness and Level Fluctuations of FM Output</u>

1) Connect an oscilloscope to TP203 on the main circuit board.
2) Synchronize the oscilloscope with TP201 (SW25) on the main circuit board.
3) Set the TRACKING control to the centre click position.
4) Playback the alignment tape (50HMPE-3C).
5) Adjust the voltage level control of the oscilloscope so that the maximum amplitude of the FM output is set to 4 graduations on the monitor of the oscilloscope. (See Fig. 3-16)
6) Turn the TRACKING control to set the maximum amplitude of FM output to 3 graduations on the monitor of the oscilloscope. (See Fig. 3-16)
7) Check that the minimum amplitude is set to more than 2 graduations at this time. If it cannot be confirmed, fine adjust the height of the guide rollers.

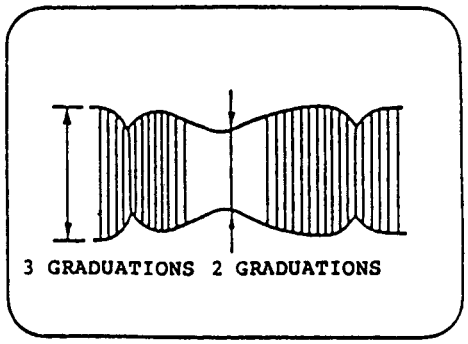


Fig. 3-16

7. TORQUE CONFIRMATION (Fig. 3-17)
Confirm the following before adjusting the torque.

- Check that the take-up brake is compressed against the take-up gear.

7-1. TAKE-UP TORQUE CONFIRMATION

1) Load the back-tension/play torque meter and set the unit to the play mode.
2) Check that the torque indicated by the right meter is between 40 and 60 g-cm.

7-2. REVERSE-SEARCH TORQUE CONFIRMATION

1) Load the back-tension/play torque meter and set the unit to the reverse-search mode.
2) Check that the torque indicated by the left meter is more than 60 g-cm.

7-3. REVERSE-SEARCH BRAKE TORQUE CONFIRMATION

1) Load the back-tension/play torque meter and set the unit to the reverse-search mode.
2) Check that the brake torque indicated by the right meter is between 15 and 35 g-cm.

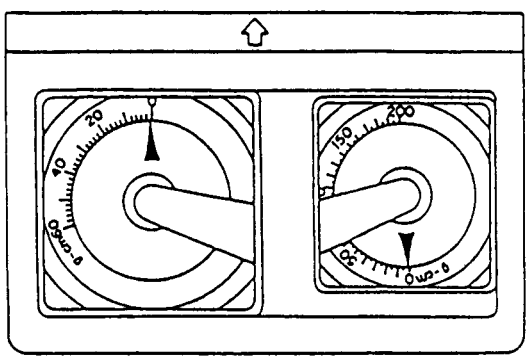


Fig. 3-17

CHAPTER 4 ELECTRICAL ADJUSTMENT

1. CONNECTIONS FOR ADJUSTMENT

Remove the components (cases) shown in the table below first, referring to DISASSEMBLY in CHAPTER 2. Then remove one (1) screw and open the fuse cover. The electrical adjustment in the camera section excluding "Subcarrier Frequency Adjustment", "VCO Lock Adjustment", Drive Pulse Frequency Adjustment" and "Sensor Sub Voltage Adjustment" can be done in the state shown in Fig. 4-1.
"X-value Adjustment" and Guide Roller Height Adjustment" in the mechanical adjustment can also be done.

ORDER FOR REMOVING PARTS	ITEM No.
∘ Cassette Lid	1-1
∘ VTR Right Case	1-3
∘ EVF Block	1-4
∘ Camera Bottom Case	2-1

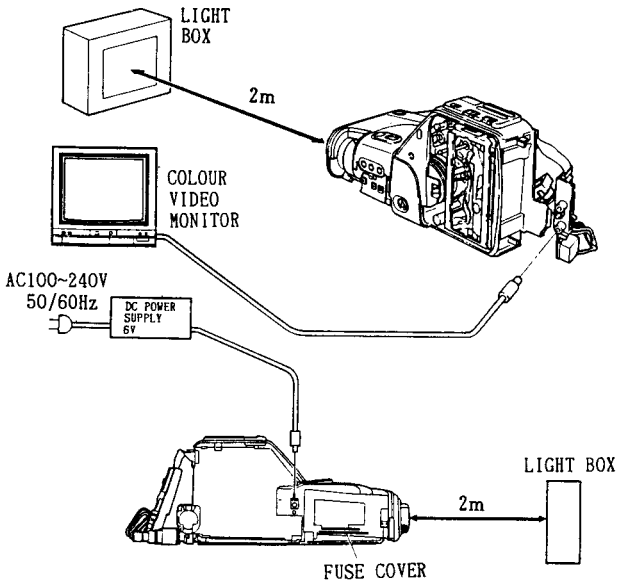


Fig. 4-1

2. CAMERA SECTION ADJUSTMENT

2-1. CIRCUIT BOARD LOCATIONS AND SERVICING POSITION

1. IC002 (Sensor/Pre-Process)
2. Control Circuit Board
3. Autofocus Circuit Board
4. Process Circuit Board

A. 18-Pin Extension Cable (Part No. 7099365). Connect the IC002 (PG001 on the sensor/pre-process) and process circuit board (PG101).

B. 18-Pin Extension Cable (Part No. 7099365). Connect the autofocus circuit board (PG302) and process circuit board (PG102).

Note: Plug the 11-pin extension cable into the process circuit board as shown in Fig. 4-2 for adjustment. The 11-pin extension cable corresponds to TP101-3 - TP101-13 in the test (TP101-1 and 2 are not used in adjustment.)

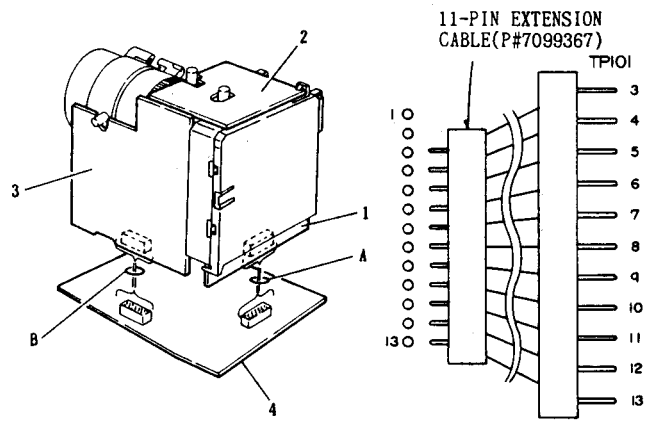


Fig. 4-2

2-2. TEST EQUIPMENT AND CHARTS NECESSARY FOR ADJUSTMENT

∘ Test Equipment
- Oscilloscope (dual trace)
- (Vectorscope)
- Digital Voltmeter (DVM)
- Frequency Counter
- Colour Video Monitor

∘ Charts, etc.
- Gray Scale Chart
- Colour Bar Chart
- Resolution Chart
- Backfocus Adjustment Chart
- Light Box (3100°K)
- Light Balancing Filter (C12)
- Step-up Ring
- DC Power Supply (6 V)
- DC Power Supply (0 - 5 V)
- Backfocus Adjustment Driver
- Semi-variable Resistor Adj. Driver

2-3. ADJUSTMENT CONDITIONS

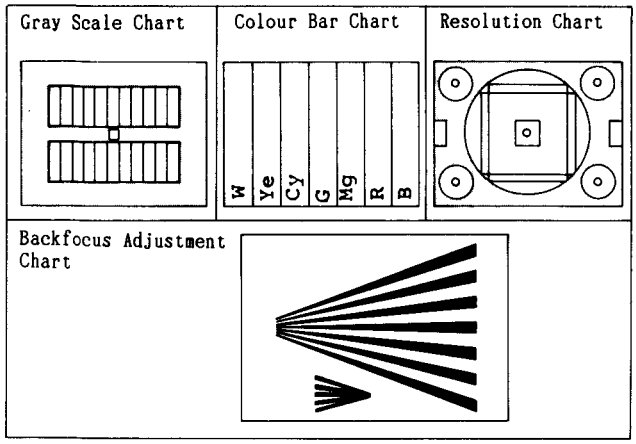
1) Check that the VTR section has been adjusted correctly before adjusting the camera section.
2) Connect this unit, a power supply and a colour video monitor as shown in Fig. 4-1.
3) Place the chart (light box) 2 m away from the camera (lens surface) when otherwise not specified.
4) Point the camera at the chart to fill the video period when otherwise not specified.
5) Use the 10:1 probe of the oscilloscope when otherwise not specified.
6) When "Trigger the oscilloscope at H. rate" is specified, set the time base of the oscilloscope to 10 µs/div.
7) When using TP205 (VIDEO OUT) on the main circuit board to perform adjustment, be sure to terminate the AV output jack with 75 ohm.

2-4. PRESET POSITIONS OF SWITCHES AND CONTROLS DURING ADJUSTMENT

Twist Grip ..... "CAM" position
FOCUS ..... "Manual"
TITLE ..... "OFF"

2-5. LIST OF CHARTS FOR CAMERA ADJUSTMENT

Table 4-1



2-6. CAMERA ADJUSTMENT

1) Subcarrier Frequency Adjustment

(Figs. 4-52, 4-53)

This adjustment set for frequency adjustment of subcarrier.

Test Point: TP101-3 Process
Adjust: CT102 (Fo ADJ) Process
Observe: Frequency Counter

1. Connect the frequency counter to TP101-3.
2. Adjust CT102 (on the IC102) for 4.433619MHz ± 20Hz.

Note: Be careful when applying an adjustment driver to CT102 because the stray capacitance of the driver may vary the frequency.

2) VCO Lock Adjustment

(Figs. 4-52, 4-53)

Test Point: TP101-4 Process
Adjust: CT101 (VCO LOCK) Process
Observe: DVM

1. Connect the DVM to TP101-4.
2. Adjust CT101 for 3.2V ± 0.1V.

Note: Be careful when applying an adjustment driver to CT101 because the stray capacitance of the driver may vary the voltage.
Use non-metalic adjustment tool.

3) Drive Pulse Frequency Adjustment

(Fig. 4-51)

This adjustment sets the drive pulse frequency to the specified value.

Test Point: TP2 Sensor
Adjust:
CT1 (DRIVE CLOCK Fo) Sensor
Observe: DVM

1. Connect the DVM to TP2.
2. Adjust CT1 for 2.5 V ± 0.1V.

Note: Be careful when applying an adjustment driver to CT1 because the stray capacitance of the driver may vary the voltage.
Use non-metalic adjustment tool.

4) Sensor Sub Voltage Adjustment

(Figs. 4-3, 4-51)

This adjustment sets the sensor sub-voltage. If this adjustment is incomplete, blooming and surface roughness appear in the picture.

Test Point: TP1 Sensor
Adjust:
RT1 (SENSOR SUB VOLTAGE) Sensor
Observe: DVM

1. Check the marking (Fig. 4-3) on the back of the image sensor (IC001) and obtain the specified voltage from Table 4-2.
2. Connect the DVM to TP1.
3. Adjust RT1 so the voltage at TP1 matches the specified voltage obtained in step 1.

Note: The marking on the image sensor (IC001) consists of two characters (one letter and one numeral). The letter is an abbreviation of an integer and the numeral is the decimal place.

(Example) When the marking is C1:

C (Integer) 1 (Decimal)

C (integer) = 12
1 (decimal) = 0.1

C1 = 12 + 0.1 = 12.1 V

Table 4-2

MARKING	7	8	9	A	B	C	D
VOLTAGE	7	8	9	10	11	12	13

MARKING	E	F	G	H	I	J
VOLTAGE	14	15	16	17	18	19

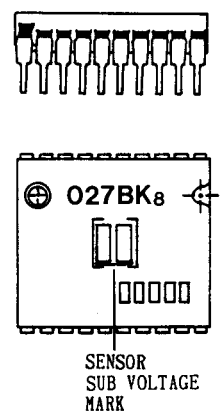


Fig. 4-3

5) Backfocus Adjustment (Fig. 4-4)

The propose of this adjustment is to ensure proper focus tracking throughout the zoom range.

Adjust: BACKFOCUS ADJUSTMENT POINT (BACKFOCUS LENS)
Observe: Colour Video Monitor

1. Position the camera section two (2) meters from the backfocus adjustment chart and illuminate the object with approximately 100 lux.
2. Set the zoom to wide-angle end and set the index on the focus ring to two (2) meters.
3. Loosen the relay lens retaining screw.
4. Insert the backfocus adjustment driver into the backfocus adjustment hole and turn it to the left and right to optimize the focus.
5. Set the zoom to telephoto end and check that the chart is in focus. If it is not focused, set the zoom to wide-angle and readjust step 4.
6. Adjust so the chart is approximately in focus at both the wide-angle and telephoto ends with the focus ring set to two (2) meters.

Note: After adjustment is completed, tighten the relay lens retaining screw and fix it with locking paint.

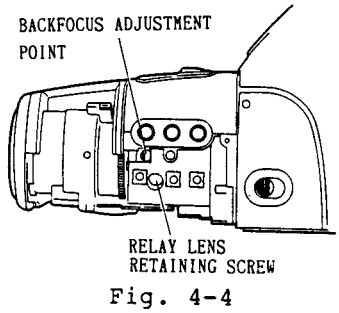


Fig. 4-4

6) Luminance Setup Adjustment
(Figs. 4-5, 4-53)
This adjustment sets the brightness of the picture.

Test Point: TP205 (VIDEO OUT) — Main
Adjust: RT104 (LUMA SETUP) — Process
Observe: Oscilloscope

1. Cap the lens.
2. Connect the oscilloscope to TP205.
3. Trigger the oscilloscope at H. rate. (Use TP101-13 (CHD) on the process circuit board.)
4. Adjust RT104 for 35mV ± 10mV from the blanking level to the centre of the waveform.

Fig. 4-5

7) Matrix Adjustment (Figs. 4-6, 4-53)
This adjustment corrects for unevenness in tint.

Test Point: TP101-8 — Process
Adjust: RT101 (MATRIX) — Process
Observe: Oscilloscope

1. Aim the camera at the colour chart.
2. Connect the oscilloscope to TP101-8.
3. Trigger the oscilloscope at H. rate. (Use TP101-13 (CHD) on the process circuit board.)
4. Adjust RT101 so that the blue level becomes 70% ± 10% of the white level.

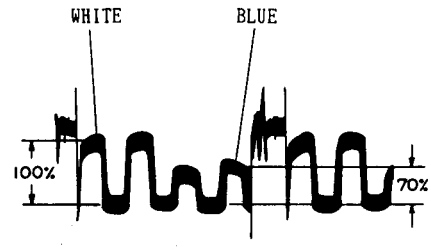


Fig. 4-6

8) AIC Level Adjustment
(Figs. 4-7, 4-53)
This adjustment sets the balance point of the auto iris control.

Test Point: TP205 (VIDEO OUT) — Main
Adjust: RT108 (AIC) — Process
Observe: Oscilloscope

1. Aim the camera at the gray scale chart.
2. Connect the oscilloscope to TP205.
3. Trigger the oscilloscope at H. rate. (Use TP101-13 (CHD) on the process circuit board.)
4. Adjust RT108 for 715mVp-p ± 15mV from the blanking level to the centre of the white level on the gray scale.

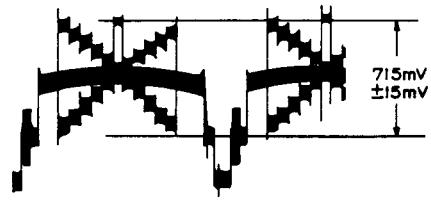


Fig. 4-7

9) Black Balance Adjustment
(Figs. 4-8, 4-53)
This adjustment sets the proper black balance of the picture.

Test Point: TP205 (VIDEO OUT) — Main
Adjust: RT106 (RED SETUP) — Process
RT112 (BLU SETUP) — Process
RT105 (GRN SETUP) — Process
Observe: Oscilloscope
Vectorscope

Adjustment using the oscilloscope
(Fig. 4-8)
1. Cap the lens.
2. Connect the oscilloscope to TP205.
3. Trigger the oscilloscope at H. rate. (Use TP101-13 (CHD) on the process circuit board.)
4. Connect TP101-9 (RED) and TP101-8 (BLU) to ground (TP101-5).
5. Adjust RT105 for minimum carrier in the waveform.

6. Remove the ground (TP101-5) connections from TP101-9 and TP101-8.
7. Adjust RT106 and RT112 for minimum carrier in the waveform.

Adjustment using the vectorscope

See Page 4-7.

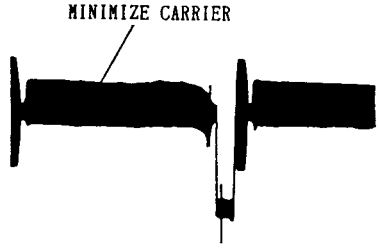


Fig. 4-8

10) White Balance Adjustment
(Figs. 4-9, 4-53)

This procedure sets the correct red and blue signal levels for proper white balance circuit operation.

Test Point:
TP205 (VIDEO OUT) Main
Adjust: RT102 (RED GAIN) Process
RT103 (BLU GAIN) Process
Observe: Oscilloscope
Vectorscope

Adjustment using the oscilloscope
(Fig. 4-9)

1. Attach the light balancing filter C12 over the lens.
2. Aim the camera at the gray scale chart.
3. Connect TP101-10 to ground (TP101-5) and remove ground (TP101-5) connection from TP101-10.
4. Apply DC 3.3V ± 0.05V to TP101-10.
5. Connect the oscilloscope to TP205.
6. Trigger the oscilloscope at H. rate. (Use TP101-13 (CHD) on the process circuit board.)
7. Adjust RT102 and RT103 to minimize the carriers at each step of the waveform.
8. Remove the DC power supply (3.3V) from TP101-10.

Adjustment using the vectorscope

See Page 4-6.

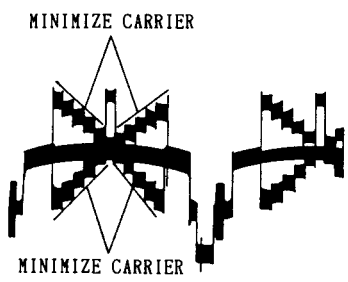


Fig. 4-9

11) Chroma Level Adjustment
(Figs. 4-10, 4-53)

This adjustment sets the chroma level.

Test Point:
TP205 (VIDEO OUT) Main
Adjust:
RT107 (CHROMA LEVEL) Process
Observe: Oscilloscope
Vectorscope

Adjustment using the oscilloscope
(Fig. 4-10)

1. Attach the light balancing filter C12 over the lens.
2. Aim the camera at the colour chart.
3. Connect the oscilloscope to TP205.
4. Trigger the oscilloscope at H. rate. (Use TP101-13 (CHD) on the process circuit board.)
5. Confirm the burst level of the waveform is 300mV ± 30mV.
6. Adjust RT107 so that the red level of the waveform is 585mV ± 50mV. Check that the tint of the chart and the tint of the picture are approximately matched at this time.

Adjustment using the vectorscope

See Page 4-6.

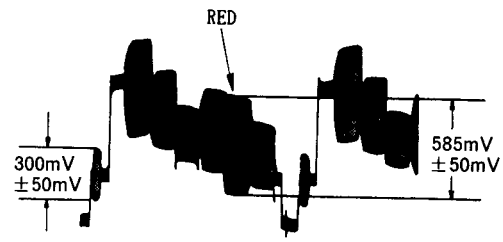


Fig. 4-10

12) Program AE Adjustment (Fig. 4-53)

This adjustment sets the shutter speed switching point. If this adjustment is incomplete, the program AE dose not operate correctly.

Test Point: TP101-11 Process
TP101-12 Process
Adjust:
RT110 (AE ADJ 1) Process
RT109 (AE ADJ 2) Process
Observe: DVM

1. Connect the DVM to TP101-12.
2. Adjust RT109 and RT110 so the voltage at TP101-12 is minimum.
3. Adjust RT109 so the voltage at TP101-12 is 2.75V ± 0.1V.
4. Connect the DC power supply to TP101-11.
5. Measure the voltage at TP101-12 when DC 5V is applied to TP101-11 and when it is connect to ground (TP101-5), and adjust RT110 so the difference is 3.5V ± 0.1V.
6. Disconnect the DC power supply from TP 101-11.

13) Titler Position Adjustment
(Fig. 4-53)

This adjustment sets the position of the title.

Note: Perform this adjustment while no title is stored in memory.

Adjust:
RT113 (TITLE POSITION) Process
Observe: Colour Video Monitor

1. Press the TITLE ON/OFF button so that a crosshatch pattern appears on the monitor screen.
2. Adjust RT113 so the left end of the crosshatch pattern is aligned with the left edge of the monitor screen.

2-7. ELECTRONIC VIEWFINDER (EVF) ADJUSTMENT

1) Deflection Yoke Position Adjustment (Fig. 4-11)
This adjustment procedure eliminates picture tilt on the EVF display.

Adjust: Deflection yoke
Observe: EVF Display

1. Align the camera with the resolution chart making sure that both the camera and the chart are on the same plane.
2. Loosen the screw holding the deflection yoke.
3. Turn the deflection yoke so that the EVF picture (chart) is horizontal, matching the edges of the CRT.

Note: After adjustment is completed, tighten the deflection yoke retaining screw.

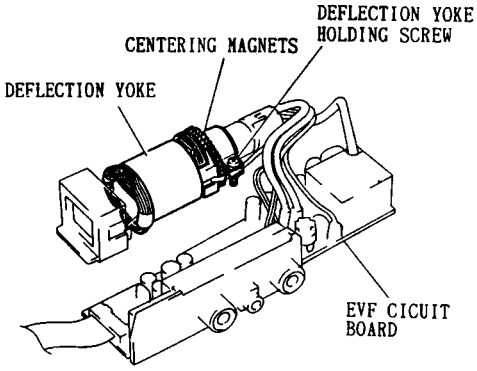


Fig. 4-11

2) EVF Centring Adjustment (Fig. 4-11)
This adjustment centre the image observed by the camera in the EVF display.

Adjust: Centring Magnets
Observe: EVF Display

1. Aim the camera at the resolution chart and align the centre of the chart with the centre of the camera lens.
2. Remove the locking paint from the centering magnets.
3. Adjust the centring magnets until the centre of the picture viewed by the camera is positioned in the centre of the EVF Display.

Note: After adjustment is completed, fix the centring magnets with lock paint.

3) EVF Vertical Size Adjustment (Fig. 4-54)
This adjustment determines the vertical size of the image appearing in the EVF display.

Adjust: RT802 (V. SIZE) **EVF**
Observe: EVF Display

1. Aim the camera at the resolution chart, and line up the reference arrow head with the edge of the raster in the EVF.
2. Adjust RT802 so that the top and bottom edges of the chart match the top and edges of the CRT.

4) EVF Brightness Adjustment (Fig. 4-54)
This adjustment sets the brightness of the picture in the EVF display.

Adjust: RT805 (BRIGHT) **EVF**
Observe: EVF Display

1. Aim the camera at the gray scale chart.
2. Adjust RT805 to optimize the EVF picture.

5) EVF Focus Adjustment (Fig. 4-54)
This control adjusts for optimum focus of the electronic viewfinder picture.

Adjust: RT803 (FOCUS) **EVF**
Observe: EVF Display

1. Aim the camera at the resolution chart.
2. Adjust RT803 so that the EVF picture is clear.

2-8. AUTOFOCUS ADJUSTMENT

1) Sensor Position Adjustment (Fig. 4-12)

Adjust: Sensor Adjustment Screw
Observe: Colour Video Monitor

1. Position the camera section two (2) meters from the backfocus adjustment chart and illuminate the object with approximately 100 lux.
2. Remove the autofocus adjustment cap.
3. Set the index on the focus ring to two (2) meters. Check that the chart is in focus. If it is not in focus, readjust the backfocus.
4. Set the zoom to telephoto end.
5. Set the FOCUS switch to AUTO position.
6. Operate the autofocus from the telephoto end to the wide-angle end and check that the chart is in focus with the index at two (2) meters.
7. If the chart is not in focus, turn the Sensor Adjustment Screw so the index on the focus ring is two (2) meters.

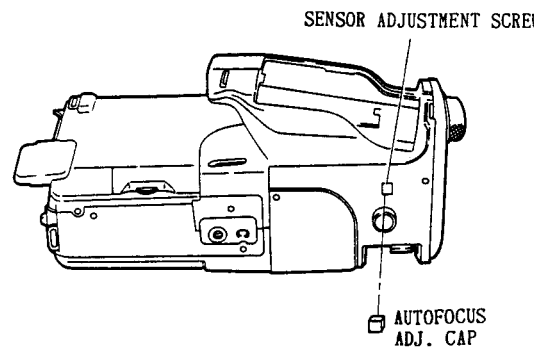


Fig. 4-12

2-9. ADJUSTMENT USING THE VECTORSCOPE

Note 1: Use the video output jack as the test point for all adjustments.
Note 2: Terminate the vectorscope with 75 ohm or connect the vectorscope to the video output jack terminated with 75 ohm.

ITEM No.	ADJUSTMENT NAME	SUBJECT	ADJUSTMENT POINT	PROCEDURE	Fig. No.
9)	Black Balance Adjustment	Lens Cap	RT105 RT106 RT112	1. Connect TP101-8 and TP101-9 to GND (TP101-5). 2. Adjust RT105 so that the bright spot is positioned at the centre. 3. Remove the ground (TP101-5) connections from TP101-8 and TP101-9. 4. Adjust RT106 and RT112 so that the bright spot is positioned at the centre.	4-13 4-13
10)	White Balance Adjustment	Gray Scale	RT102 RT103	1. Attach the light balancing filter C12 over the lens. 2. Connect TP101-10 to ground (TP101-5) and remove ground (TP101-5) connection from TP101-10. 3. Apply DC 3.3V ± 0.05V to TP101-10. 4. Adjust RT102 and RT103 so that the bright spot is positioned at the centre. 5. Remove the DC power supply (3.3V) from TP101-10.	4-13
11)	Chroma Level Adjustment	Colour Bar	RT107	1. Attach the light balancing filter C12 over the lens. 2. Adjust RT107 so that the red vector is equal to more than 200% ± 10% when compared to the burst level.	4-14

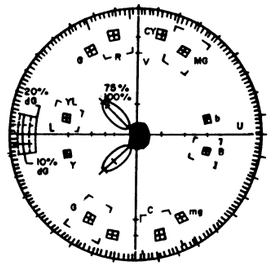


Fig. 4-13

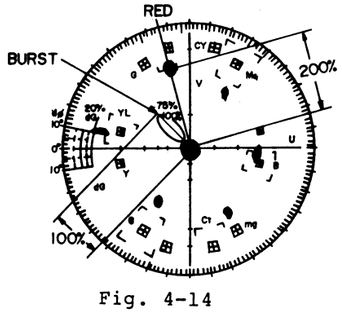


Fig. 4-14

2-10. ADJUSTMENT COMPONENTS LOCATIONS

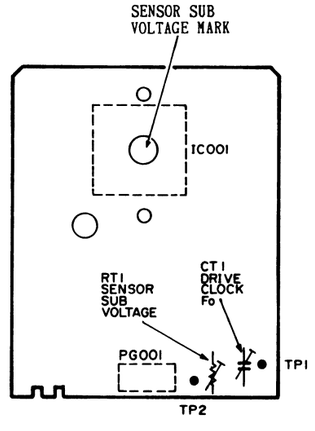


Fig. 4-51 Sensor Circuit Board (Solder Side)

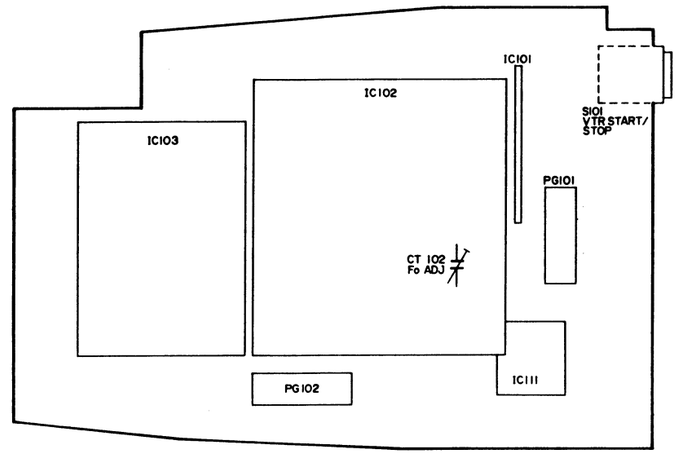


Fig. 4-52 Process Circuit Board (Components Side)

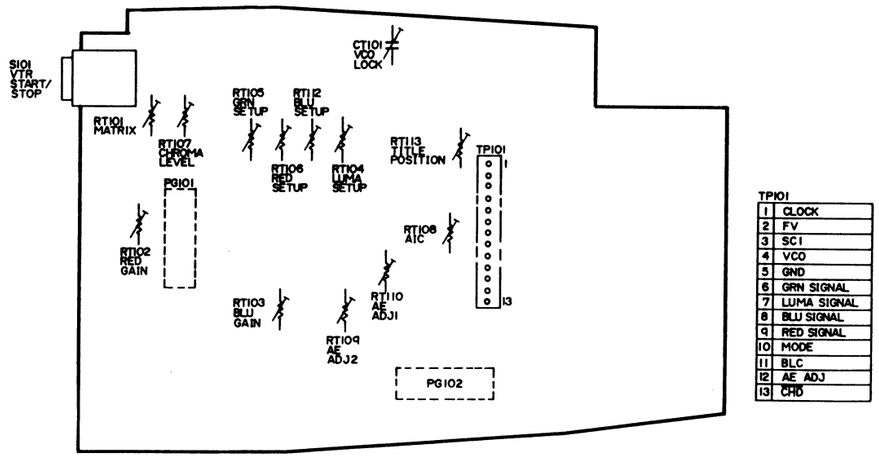


Fig. 4-53 Process Circuit Board (Solder Side)

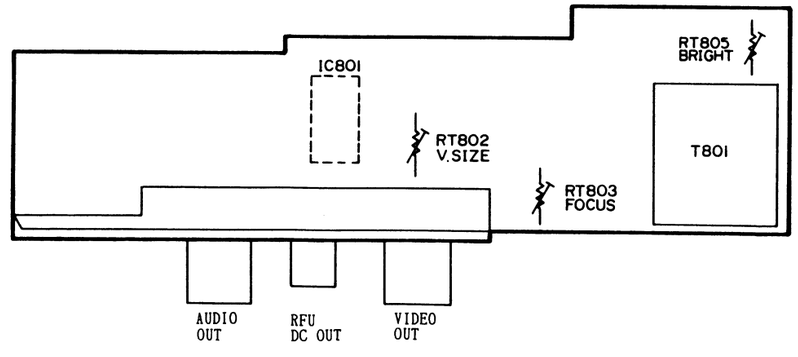


Fig. 4-54 Electronic Viewfinder Circuit Board (Components Side)

3. VTR SECTION ADJUSTMENT

3-1. CIRCUIT BOARD LOCATIONS AND SERVICING POSITIONS

Also remove the dew sensor from the A/C head base. (When the connector of the dew sensor is disconnected from the main circuit board, the unit enters the state in which condensation has been detected and the dew sensor is disabled.)

1. Main Circuit Board
2. Motor Drive Circuit Board
3. Function Switch

A. 30-Pin Extension Cable (Part No. 7099364). Connect the motor drive circuit board and main circuit board.

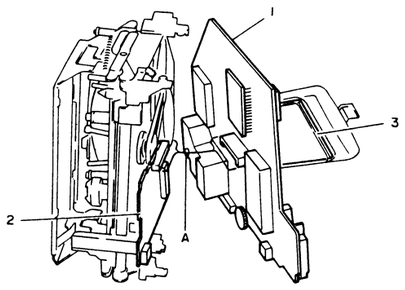


Fig. 4-101

3-2. TEST EQUIPMENT AND ALIGNMENT TAPES NECESSARY FOR ADJUSTMENT

- Test Equipment
  - Oscilloscope (dual trace)
  - Digital Voltmeter (DVM)
  - Millivoltmeter
  - Colour Video Monitor
- Alignment Tape and Charts, etc.
  - Alignment Tape (50HMBE-3C)
  - Alignment Tape (50HMPE-3C)
  - Alignment Tape (HMAE-3C)
  - Blank Tape
  - Colour Bar Chart
  - 3100°K Light Box
  - DC Power Supply (6V)
  - Semi-Variable Resistor Adj Driver

3-3. ADJUSTMENT CONDITIONS

1) Connect this unit, a power supply and a colour video monitor as shown in Fig. 4-1.
2) Before adjusting the VTR section, check that the camera section has been adjusted correctly.
3) Point the camera at the chart to fill the video period when otherwise not specified.
4) Use the 10:1 probe of the oscilloscope when otherwise not specified.
5) When "REC"mode is specified, load the instrument with a blank tape, set the twist grip to CAM position and press the VTR start stop button on the process circuit board.

3-4. PRESET POSITIONS OF SWITCHES AND CONTROLS DURING ADJUSTMENT

Twist Grip ..... "VTR" position
TRACKING control ..... Centre position
TAPE SPEED ..... "SP" mode

3-5. SERVO SECTION

1) Head Switching Point Adjustment (Figs. 4-102, 4-151)

The pulse generator shifter determines the video head switching point during playback. Misadjustment of pulse generator shifter may cause head switching noise in the picture and/or vertical instability.

Test Point:
TP205 (VIDEO OUT) Main
Adjust:
RT602 (PG SHIFTER) Main
Observe: Oscilloscope

1. Load the instrument with an alignment tape (50HMBE-3C) and play it back the colour bar signal.
2. Connect the oscilloscope to TP205 (0.5V/50µsec.cm).
3. Trigger the oscilloscope at SW 25Hz. (Use TP201 on the main circuit board.)
4. Set the oscilloscope to (-) slope and adjust RT602 so that the trailing edge of the SW 25Hz signal is placed 6.5H ± 0.5H (horizontal) lines before the start of CH-1 vertical sync.
5. Set the oscilloscope to (+) slope and confirm the leading edge of the SW 25Hz signal is 6.5H ± 0.5H (horizontal) lines before the start of CH-2 vertical sync.

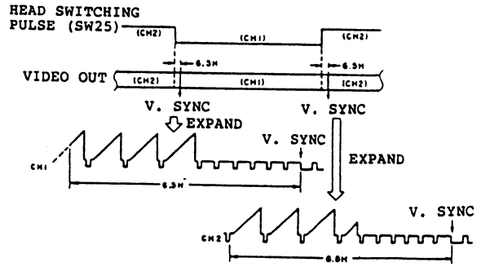


Fig. 4-102

2) Tracking Preset Adjustment (Figs. 4-103, 4-151)

This adjustment is performed to obtain correct tracking during playback of a tape recorded on the same instrument. When this adjustment is incomplete, noise may conspicuous with the tracking control placed in the detent position or noise may not be removed by the tracking control.

Test Point:
TP205 (VIDEO OUT) Main
PG601-1 Main
Adjust:
RT601 (TRACKING PRESET) Main
Observe: Oscilloscope

1. Set the TRACKING control to the mechanical centre (centre click) position.
2. Aim the camera at the colour bar chart.
3. Using a blank tape, make a recording and play it back.
4. Connect CH-1 of the oscilloscope to TP205 (5V/0.5msec.cm).
5. Connect CH-2 of the oscilloscope to PG601-1 (1V/0.5msec.cm).
6. Trigger the oscilloscope at SW 25Hz. (Use TP201 on the main circuit board.)
7. Set the oscilloscope to the (-) slope.
8. Adjust RT602 so that the CTL pulse and vertical sync of the video signal match.

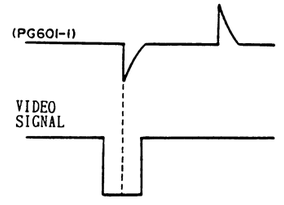


Fig. 4-103

3-6. LUMA/CHROMA SECTION

1) Record Luma/Chroma Level Adjustment (Figs. 4-104, 4-105, 4-151)

Optimum record colour level is regulated by this adjustment. If the record chroma level is too high, diamond beats can be seen in the screen. If the levels is too low, the colour is degraded.

Test Point: TP101 Main
Adjust:
RT201 (REC LUMA LEVEL) Main
RT271 (REC CHROMA LEVEL) Main
Observe: Oscilloscope

1. Cap the lens.
2. Connect the oscilloscope to TP101. (Use the shield cover of the preamp section on the main circuit board as ground.) (50mV/5msec.cm)
3. Trigger the oscilloscope at SW 12.5Hz. (Use TP202 on the main circuit board.)
4. Place the instrument in the "REC" mode.
5. Adjust RT201 to minimize the record luminance level.
6. Adjust RT271 so that the burst level on the record chroma level is 18mV ± 3mV.
7. Adjust RT201 so that the sync chip on the record luminance level is 105mV ± 10mV.

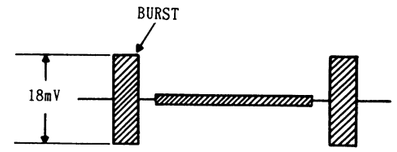


Fig. 4-104

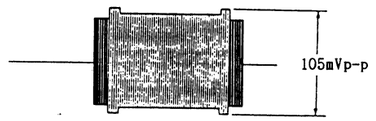


Fig. 4-105

2) 1H Delay Line Output Level Adjustment (Figs. 4-106, 4-151)

This adjustment makes the input and output levels of the 1H delay Line the same. If this adjustment is incomplete, switching noise is conspicuous when dropout is compensated.

Test Point: TP204 Main
Adjust:
RT202 Main
(1H DELAY LINE OUTPUT LEVEL)
Observe: Oscilloscope

1. Load the instrument with an alignment tape (50HMBE-3C) and play it back the colour bar signal.
2. Connect the oscilloscope to TP204. (0.2V/5msec.cm).
3. Trigger the oscilloscope at SW 25Hz. (Use TP201 on the luma/chroma circuit board.)
4. Adjust RT202 to minimize noise at the waveform.

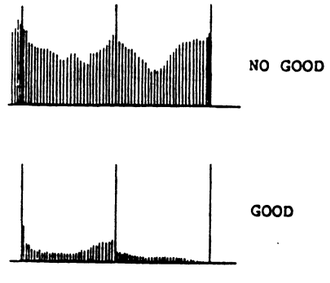


Fig. 4-106

3-7. AUDIO SECTION

1) Audio Bias Level Adjustment
(Fig. 4-151)

This adjustment optimizes the audio record bias.
When the audio record bias is too low, high frequencies are increased resulting in distortion. When the level is too high, high frequencies are attenuated.

Test Point: TP401 Main
TP402 Main

Adjust:
RT401 (AUDIO BIAS LEVEL) Main
Observe: Millivoltmeter

Note: Perform this adjustment without applying an audio signal.

1. Connect the millivoltmeter to TP401. (Use TP402 as ground.)
2. Place the instrument in the "REC" mode.
3. Adjust RT401 for 2.8mV ± 0.1mV.

3-8. ADJUSTMENT COMPONENTS LOCATIONS

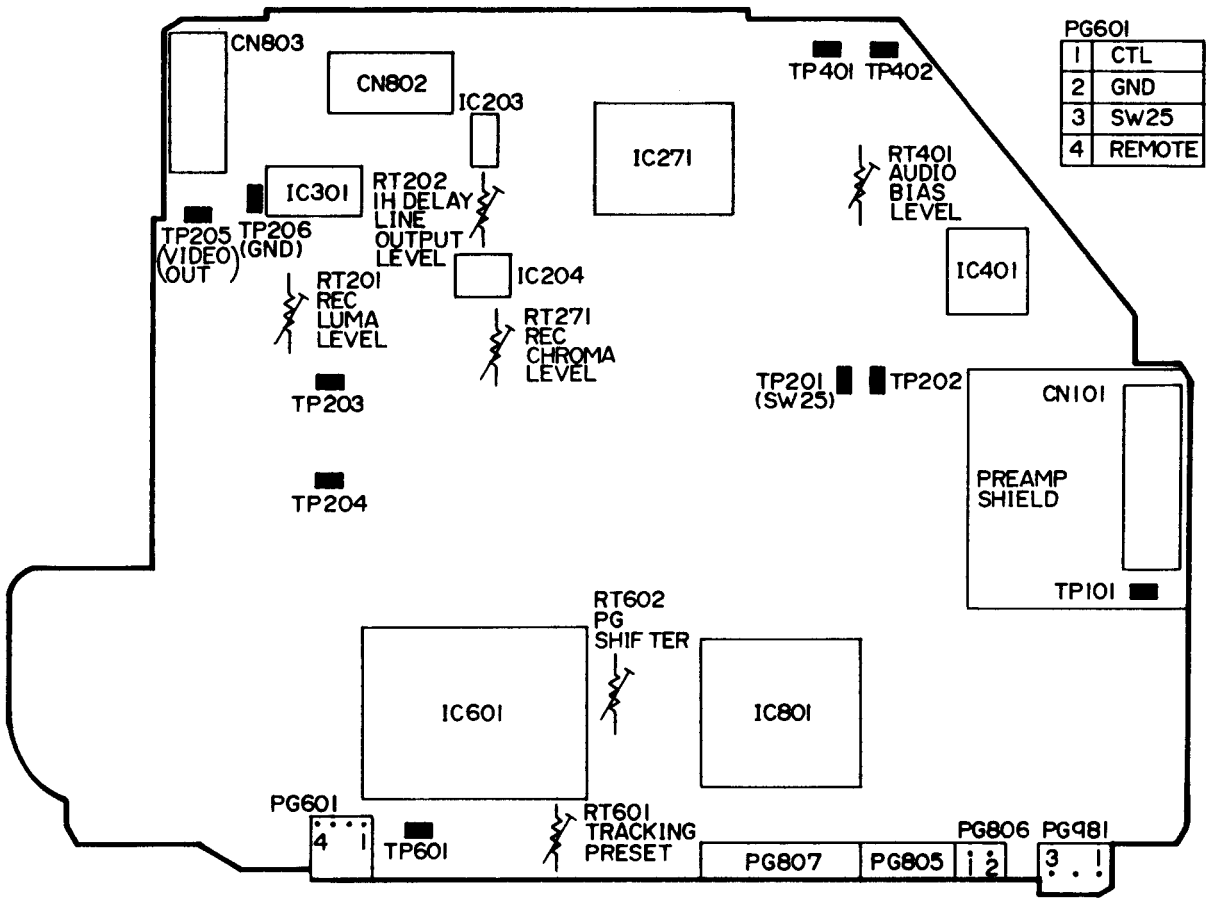


Fig. 4-151 Main Circuit Board
(Solder Side)

CHAPTER 5 SCHEMATIC DIAGRAMS AND CIRCUIT BOARD DIAGRAMS

WHEN USING THIS SERVICE REFERENCE MATERIAL

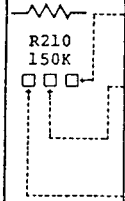
1. Markings in Schematic and Circuit Board Diagrams

(1) Parts with marks "■" attached to circuit numbers in the schematic and circuit board diagrams are discrete components.
(2) Parts with marks (2) in the circuit board diagrams are leadless jumpers.

2. How to Read Abbreviations

Values, dielectric resistances (power capacitances), tolerances, grades of resistors (excluding variable resistors, etc.) and capacitors are indicated in the schematic diagrams using abbreviations. Collate these abbreviations and the following tables for reading abbreviations to replace parts correctly.

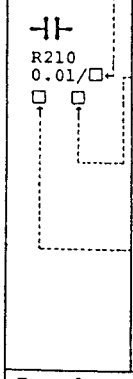
2-1. Resistors



Value	No indication ..... ohm K ..... kohm
Tolerance	No indication ..... ±5% K ..... ±10% M ..... ±20%
Power capacitance	No indication ..... 1/8W (All capacitances other than 1/8W are indicated in schematic diagrams with W omitted)
Type	No indication .. Carbon film fixed RC ..... Carbon solid RW ..... Power-type wire-wound solid RS ..... Metal oxide film solid RN ..... Metal film solid

Example
R210
150K ..... 150 kohm, carbon solid
RC.1/2.K 1/2W, ±10%

2-2. Capacitors



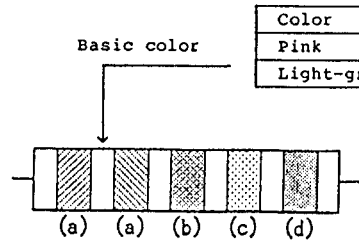
Value	No indication ..... μF P ..... PF
Dielectric resistance	No indication ..... 50WV (All resistances other than 50WV and those of electrolytic capacitors are indicated with WV omitted.)
Tolerances	No indication ..... ±10% J ..... ±5% M ..... ±20% C ..... ±0.25PF Z ..... +80%/-20% (No indication with electrolytic capacitors (excluding tantalum and high stability electrolytic capacitors)
Type	No indication .. Ceramic, general electrolytic (see circuit symbol to distinct from ceramic) MYL ..... Mylar (Polyester film) STY ..... Styrol TA ..... Tantalum KU ..... High stability electrolytic MP ..... Metalized paper

Example
C210
0.01/25 ..... Mylar, 0.01μF, 25WV
MYL.J ±5%

3. How to Read Capacitance of Resistance-Type Capacitors and Coils

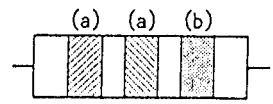
3-1 Capacitors

Color	Related voltage
Pink	25V
Light-green	50V



Color	Capacitance (a)	Multiplier (b)	Tolerance (c)	Characteristics (d)
Black	0	10^0	±20%	For temperature compensation
Brown	1	10^1		
Red	2	10^2		
Orange	3	10^3		
Yellow	4	10^4		
Green	5	10^5		
Blue	6	10^6		
Purple	7			
Gray	8		±30%	High permittivity type
White	9			For temperature compensation
Gold			±5%	
Silver			±10%	

3-2 Coils



4. Cautions on Use of MOS ICs

(1) MOS ICs are inserted in black foam for shipment. This foam is a conductor which short-circuits between the leads to prevent damage. Do not remove ICs from this foam during storage. Avoid removing ICs from this foam, placing them on plastic which is likely to be charged with static electricity or inserting them into styrol foam.
(2) High voltages may be applied during soldering caused by leakages from the soldering iron, so be sure to ground the tip of the soldering iron or use a low voltage soldering iron.
(3) The human body and clothes made of synthetic fibres or nylon gloves may be charged with several thousands volts of static electricity because of friction, so workers should be grounded.
(4) Be sure to ground measuring instruments such as oscilloscopes, VTVMs, etc. used for repairs.

5. Measure the voltages at each section with the negative side of power supply as a reference.

The voltages in the camera section are measured with the VTR in the record mode, and those in the VTR section are measured in the record and playback modes.

* Voltages in ( ) are in the record mode.
* One voltage value is common for recording and playback.

LEADLESS COMPONENT IDENTIFICATION

1. Leadless Transistors

The leadless transistor number is indicated by a code on its surface, using one letter, one letter and one numeral, two letters, two letters and one numeral, two numerals, two numerals and one letter, or three letters.

Letter	Transistor Number	Letter	Transistor Number
A	2SB709	H	2SA1036K
A(R)	2SB1218R(AR)	I	2SB792
A(S)	2SB766S(AS)	J	2SC2735
A(J)	2SB1000J(AJ)	K	2SA1036
B	2SC1621	K(P)	2SC2413P(KP)
B(J)	2SB1001J(BJ)	L	2SC2462
B(R)	2SC4081R(BR)	M	2SA1052
B(R)	2SC2412AR(BR)	N	2SC1653
B(S)	2SC2412KS(BS)	N(E)	2SD1306E(NE)
C	2SA1122	P	2SD814
C(L)	2SD999L(CL)	P(E)	2SA1171E(PE)
C(R)	2SB710R(CR)	Q	2SC2620
C(R)	2SC4097R(CR)	Q(O)	2SC2714O(QO)
C(R)	2SC2411R(CR)	R	2SC2618
C(Q)	2SC2411KQ(CQ)	S	2SA1121
D	2SC2463	S(Q)	2SC3082KQ(SQ)
D(L)	2SB798L(DL)	U	2SC2404
E	2SA1022	W	2SD602
F	2SC2619	Y	2SD601
F(S)	2SA1037KS(FS)	Y(R)	2SD1819R(YR)
F(R)	2SA1576R(FR)	Z	2SD874
AA(S)	2SD1757KS(AAS)	DB(R)	2SD1766R(DBR)
BC(R)	2SB1188R(BCR)	IR(D)	2SA1484D(IRD)
BF(R)	2SB1308R(BFR)		
1D(T)	2SD1328T(1DT)	1C(R)	2SB902R(1CR)
B(3)	2SC1621(3)(B3)	L(6)	MMBC1623(6)(L6)
C(7)	2SA811(7)(C7)	L(6)	2SC1623(6)(L6)
L(7)	2SC2812(7)(L7)	F(2)	2SC1009(2)(F2)
M(6)	2SA812(6)(M6)	M(6)	2SA1179(6)(M6)
N(4)	2SC1653(4)(N4)		
D(16)	2SC1622A(16)(D16)	R(25)	2SC3356(25)(R25)
R(35)	2SC3583(35)(R35)	R(45)	2SC3585(45)(R45)
Y(25)	NTM3906(25)(Y25)		
1(D)	2SC3127D(1D)		
S1	FMS1	S2	FMS2
T1	IMT1	W1	FMW1
W2	FMW2	W3	FMW3
X1	IMX1	Y1	FMY1
Y3	FMY3	Z1	IMZ1
Z2	IMZ2		
4R	XN1C301	5H	XN4501
5K	XN4401		
Digital Transistor			
04	DTC114TK	06	DTC144TK
13	DTA143EK	15	DTA124K
15(s)	DTA124EU	16	DTA144EK
16(s)	DTA144EU	23	DTC143EK
24	DTC114EK	24(s)	DTC114EU
25	DTC124K	25(s)	DTC124EU
26	DTC144K	26(s)	DTC144EU
33	DTA143XK	43	DTC143XK
52	DTA123YK	64	DTC114YK
6B	UN5112	8B	UN5212
F52	DTB123	G21	DTD113ZK
H03	DTC343TK	H27	DTC363EK
R31	FP1L2Q		
A1	FMA1	A2	FMA2
B2	IMB2	C2	FMC2
D2	IMD2	G1	FMG1
G2	FMG2	G5	FMG5
H2	IMH2		

Letter	Transistor Number	Letter	Transistor Number
FET			
G	2SK302	J	2SK208
K	2SK160	W	2SK322
X	2SK157	X(4)	2SK94(4)(X4)
X(17)	2SK425(17)(X17)		
Y	2SK197	Z	2SK217
XA	2SK980		
3	2SK620	3(O)	2SK621(O)(3O)
1M	2SA1052	1F	2SK321
1K	2SK316	2B	2SK374

* "(s)" in the above table shows a component with smaller size.
* Codes on the digital transistors show only the transistor numbers.

(1) Identification for two letters.
Use this code and the following chart for component identification.

Example:

Code	Number
CD	2SA1122D
LD	2SC2462D

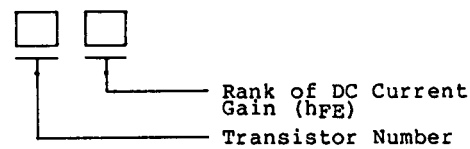


Fig.5-1 Leadless Transistor Code

(2) Identification for two types of one letter and one numeral.
Use this code and the following chart for component identification.

Letter	Transistor Number
L	2SC1623

Example:

Code	Number
L5	2SC1623(5)
L6	2SC1623(6)

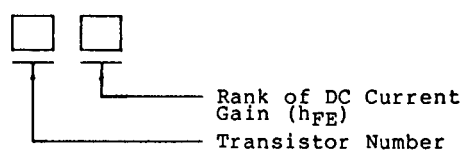
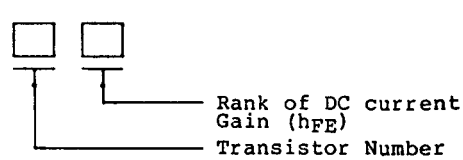


Fig.5-2 Leadless Transistor Code

Example:

Code	Number
1D	2SC3127D



Note: Codes S1, S2, T1, W1, W2, W3, X1, Y1, Y3, Z1 and Z2 show only the transistor numbers.

Fig.5-3 Leadless Transistor Code

(3) Identification for one numeral and two letters.
Use this code and the following chart for component identification.

Example:

Code	Number
1FQ	2SK321Q

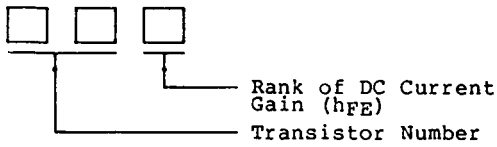


Fig.5-4 Leadless Transistor Code

(4) Identification for one letter and two numerals.
Use this coce and the following chart for component identification.

Example:

Code	Number
R25	25C3356

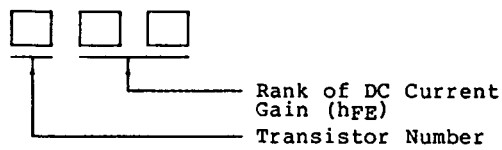


Fig. 5-5 Leadless Transistor Code

(5) Identification for two letters and one numeral.
Use this code and the following chart for component identification.

Example:

Code	Number
DV5	2SD596

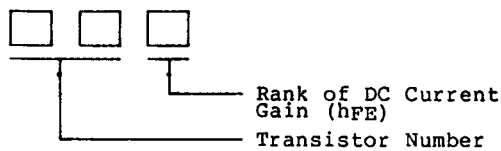


Fig. 5-6 Leadless Transistor Code

(6) Identification for three letters.
Use this code and the following chart for component identification.

Example:

Code	Number
AAS	2SD1757KS

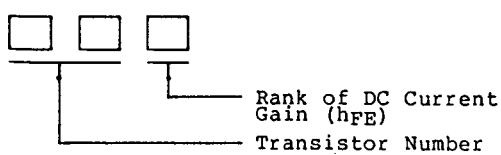


Fig. 5-7 Leadless Transistor Code

2. Leadless Diodes
Leadless diode numbers are indicated by a code on the surface, using one letter and one numeral, two letters, two letters and one numeral, two numerals, two numerals and one letter, or three numerals.
Use this code and the following chart for component identification.

Code	Diode Number	Code	Diode Number
BE	1SV172		
MC	MA153	MC(s)	MA143
MH	MA151K	MH(s)	MA141K
MN	MA151WA	MN(s)	MA141WA
MO	MA152WA		
MT	MA151WK	MT(s)	MA141WK
MU	MA152WK		
M1D	MA160	M1P	MA714
M2A	MA122	S1A	1SR143
N	DAN202K	Z	DA106K
A3	1S2835	A5	1S2837
C1	HSM88S	C2	HSM276S
1A	MA110		
3.0L	MA3030L	4.3L	MA3043L
4.7M	MA3047M	5.1M	MA3051M
5.1L	MA3051L	5.6M	MA3056M
6.2L	MA3062L	6.8M	MA3068
6.8M	MA3068M	7.5H	MA3075H
7.5L	MA3075L	8.2M	MA3082M
9.1M	MA3091	9.1M	MA3091M
10L	MA3100L	56M	MA3056M
75L	MA3075L	82M	MA3082M
91M	MA3091M		
20	HZM6-B	27	RD2.7M-B
30	RD3.0M-B	51	RD5.1M-B2
56	RD5.6M-B	91	RD9.1M-B
102	RD10M-B2	122	RD12M-B2
163	RD16M-B3	182	RD18M-B2
271	RD2.7M-B	272	RD2.7M-B2
301	RD3.0M-B	362	RD3.6M-B2
391	RD3.9M-B1	512	RD5.1M-B2
561	RD5.6M-B	621	RD6.2M-B1
681	RD6.8M-B	683	RD6.8M-B3
911	RD9.1M-B		

* "(s)" in the above table shows a component with smaller size.

3. Leadless Resistors
The resistor value is indicated on the surface of the component, using a three-digit numbers, or one letter and one numeral.

(1) Identification for three digit numbers.
Read this code following the same procedure as when reading the color code on discrete resistors.

Example:

Code	Value
330	33×10^0 = 33 ohms
561	56×10^1 = 560 ohms
123	12×10^3 = 12K ohms
1R2	1 + 0.2 = 1.2 ohms

(R: Decimal point)

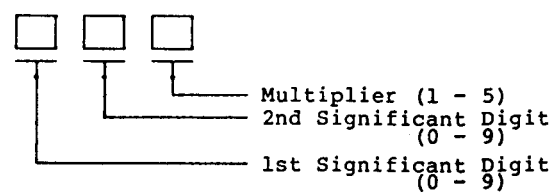


Fig. 5-8 Leadless Resistor Code

(2) Identification for one letter and one numeral.
Use this code and the following chart for component identification.

Letter	Value	Letter	Value	Letter	Value
A	1	J	2.2	S	4.7
C	1.2	L	2.7	U	5.6
E	1.5	N	3.3	W	6.8
G	1.8	Q	3.9	Y	8.2

Example:

Code	Value
A1	$1 \times 10^1 = 10$ ohms
G2	$1.8 \times 10^2 = 180$ ohms
L3	$2.7 \times 10^3 = 2700$ ohms
S4	$4.7 \times 10^4 = 47K$ ohms
W5	$6.8 \times 10^5 = 680K$ ohms

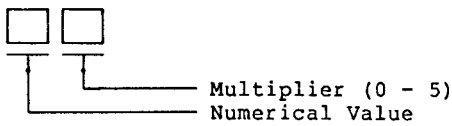
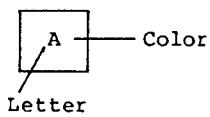


Fig. 5-9 Leadless Resistor Code

4. Leadless Capacitors

The capacitance value is indicated on the surface of the component, using body color and one letter, or one letter and one numeral.

(1) Identification for body color and one letter.

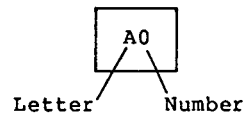


Body Color	Letter	Value	Body Color	Letter	Value
Red	A	1(PF)	Blue	A	100(PF)
	C	2		C	120
	E	3		E	150
	G	4		G	180
	J	5		J	220
	L	6		L	270
	N	7		N	330
	Q	8		Q	390
	S	9		S	470
				U	560
Black	A	10(PF)		W	680
	C	12		Y	820
	E	15			
	G	18	White	A	0.001(μF)
	J	22		E	0.0015
	L	27		J	0.0022
	N	33		L	0.0027
	Q	39		N	0.0033
	S	47		S	0.0047
	U	56		W	0.0068
	W	68			
	Y	82	Green	A	0.01(μF)
				E	0.015
				J	0.022
				N	0.033
				S	0.047
				U	0.056
				W	0.068
				Y	0.082
			Yellow	A	0.1(μF)

Example:

Color	Code	Value
Red	A	1PF
Black	A	10PF

(2) Identification for one letter and one numeral.



Letter /Number	Value	Letter /Number	Value
A0	1(PF)	A2	100(PF)
H0	2	C2	120
M0	3	E2	150
d0	4	G2	180
f0	5	J2	220
m0	6	L2	270
n0	7	N2	330
t0	8	Q2	390
y0	9	S2	470
		U2	560
A1	10(PF)	W2	680
C1	12	Y2	820
E1	15		
G1	18	A3	0.001(μF)
J1	22	E3	0.0015
L1	27	J3	0.0022
N1	33	N3	0.0033
Q1	39	S3	0.0047
S1	47	W3	0.0068
U1	56		
W1	68	A4	0.01(μF)
Y1	82	E4	0.015
		J4	0.022
		N4	0.033
		S4	0.047
		U4	0.056
		W4	0.068
		A5	0.1

Example:

Letter /Number	Value
A0	1PF
A1	10PF

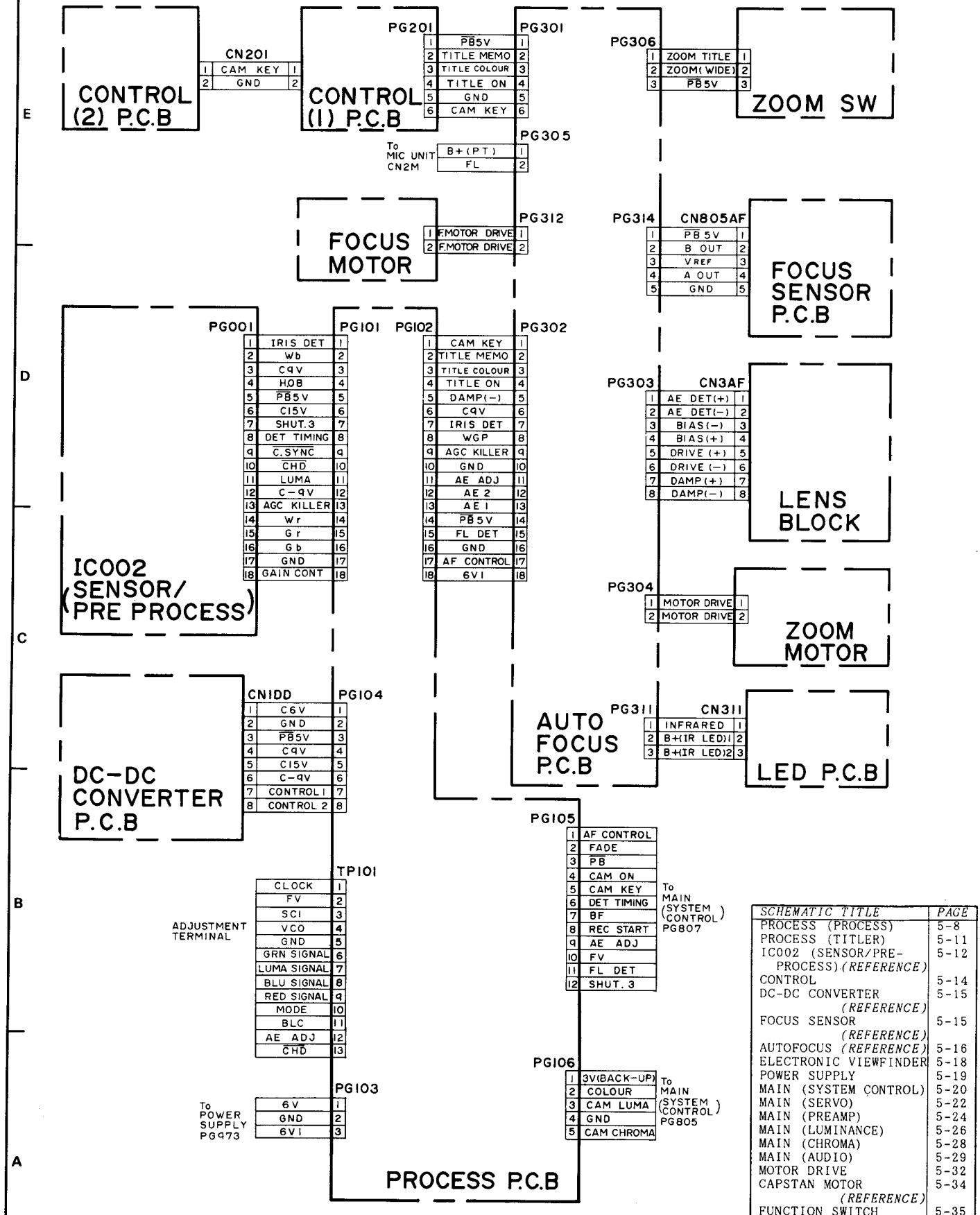
5. Leadless Jumper

The leadless jumper is indicated as shown below.

(1) (2) (3) (4)

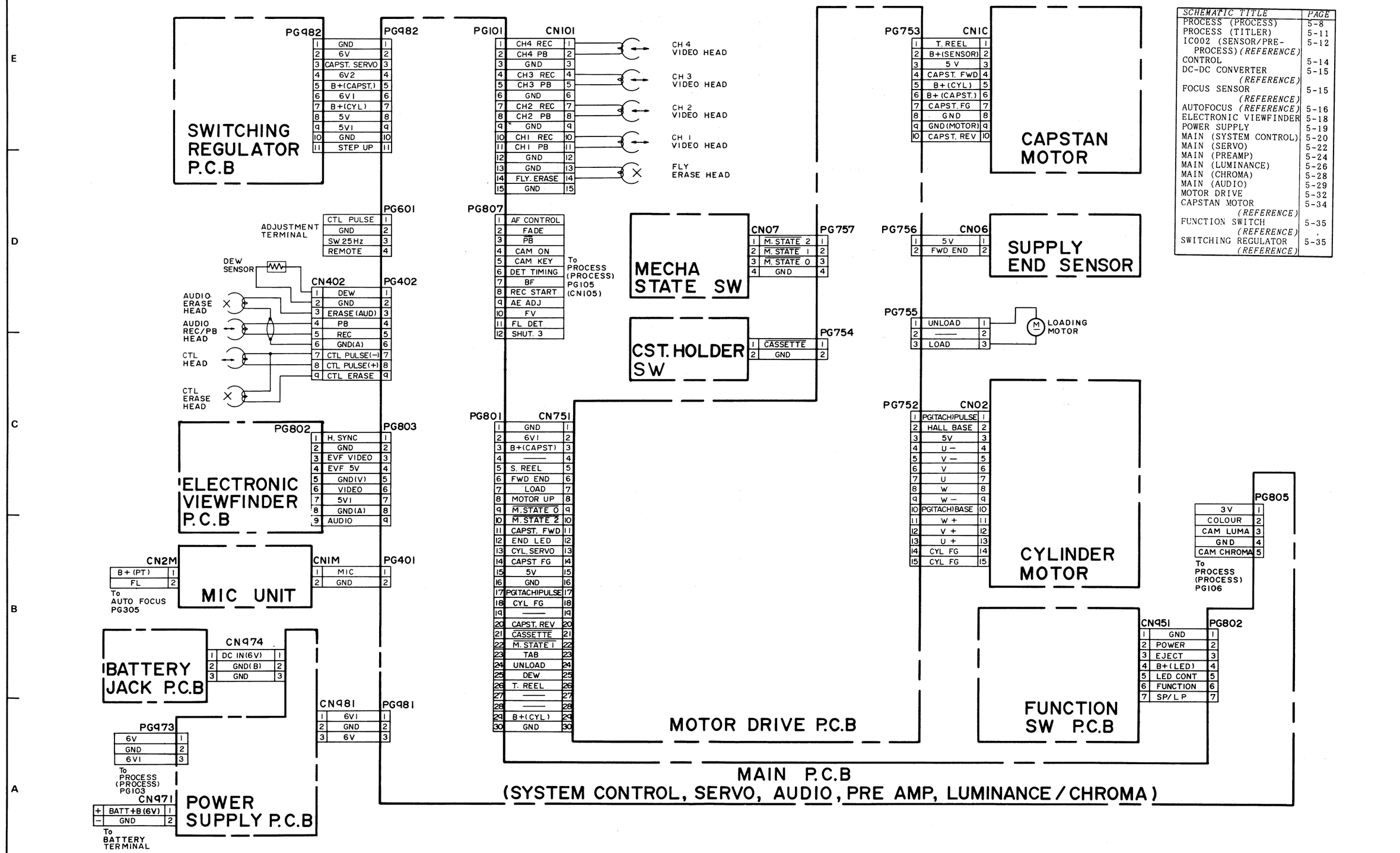
CIRCUIT BOARD CONNECTION DIAGRAM
CAMERA SECTION

LEITERPLATTEN-ANSCHLUSSDIAGRAMM
KAMERATEIL



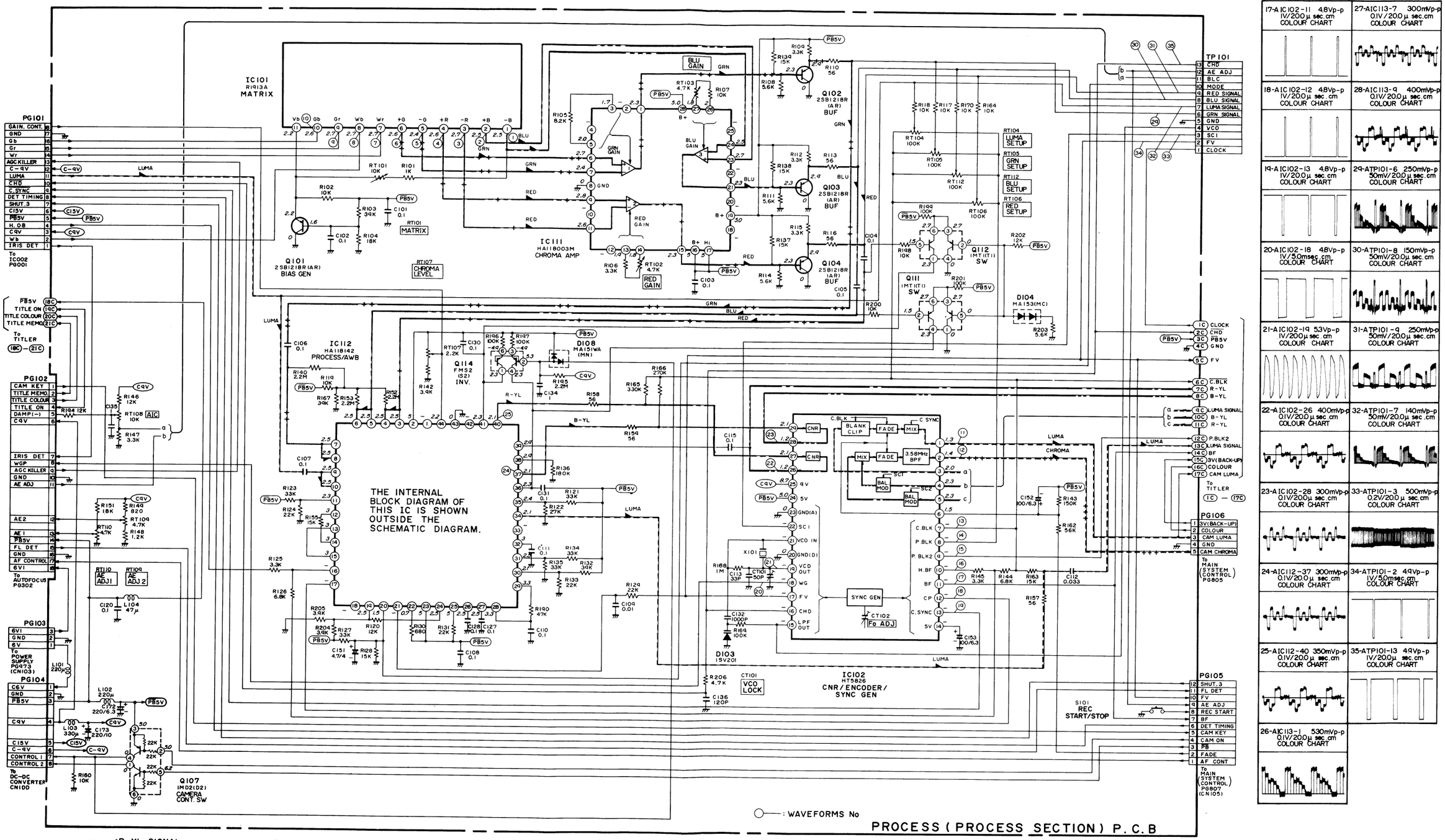
SCHEMATIC TITLE	PAGE
PROCESS (PROCESS)	5-8
PROCESS (TITLER)	5-11
IC002 (SENSOR/PRE-PROCESS) *(REFERENCE)*	5-12
CONTROL	5-14
DC-DC CONVERTER *(REFERENCE)*	5-15
FOCUS SENSOR *(REFERENCE)*	5-15
AUTOFOCUS *(REFERENCE)*	5-16
ELECTRONIC VIEWFINDER	5-18
POWER SUPPLY	5-19
MAIN (SYSTEM CONTROL)	5-20
MAIN (SERVO)	5-22
MAIN (PREAMP)	5-24
MAIN (LUMINANCE)	5-26
MAIN (CHROMA)	5-28
MAIN (AUDIO)	5-29
MOTOR DRIVE	5-32
CAPSTAN MOTOR *(REFERENCE)*	5-34
FUNCTION SWITCH *(REFERENCE)*	5-35
SWITCHING REGULATOR *(REFERENCE)*	5-35

VTR SECTION — VIDEOREKORDERTEIL



SCHEMATIC TITLE	PAGE
PROCESS (PROCESS)	5-8
PROCESS (TITLER)	5-11
IC002 (SENSOR/PRE-PROCESS) *(REFERENCE)*	5-12
CONTROL	5-14
DC-DC CONVERTER *(REFERENCE)*	5-15
FOCUS SENSOR *(REFERENCE)*	5-15
AUTOFOCUS *(REFERENCE)*	5-16
ELECTRONIC VIEWFINDER	5-18
POWER SUPPLY	5-19
MAIN (SYSTEM CONTROL)	5-20
MAIN (SERVO)	5-22
MAIN (PREAMP)	5-24
MAIN (LUMINANCE)	5-26
MAIN (CHROMA)	5-28
MAIN (AUDIO)	5-29
MOTOR DRIVE	5-32
CAPSTAN MOTOR *(REFERENCE)*	5-34
FUNCTION SWITCH *(REFERENCE)*	5-35
SWITCHING REGULATOR *(REFERENCE)*	5-35

PROCESS (PROCESS SECTION) SCHEMATIC　　PROZESS (PROZESSABSCHNITT) SCHALTPLAN

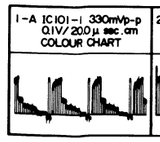


: WAVEFORMS No

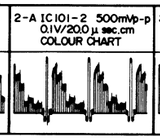
PROCESS (PROCESS SECTION) P. C. B

:R-YL SIGNAL　:B-YL SIGNAL　:LUMA SIGNAL　:CHROMA SIGNAL　:RED SIGNAL　:BLU SIGNAL　:GRN SIGNAL

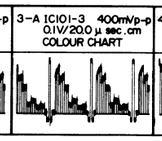
1-A IC101-1 330mVp-p 0.1V/20.0μ sec.cm COLOUR CHART



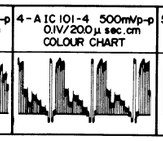
2-A IC101-2 500mVp-p 0.1V/20.0 μ sec.cm COLOUR CHART



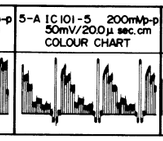
3-A IC101-3 400mVp-p 0.1V/20.0 μ sec.cm COLOUR CHART



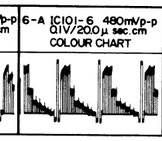
4-A IC101-4 500mVp-p 0.1V/200μ sec.cm COLOUR CHART



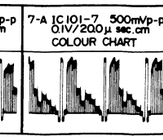
5-A IC101-5 200mVp-p 50mV/200μ sec.cm COLOUR CHART



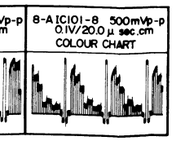
6-A IC101-6 480mVp-p 0.1V/20.0 μ sec.cm COLOUR CHART



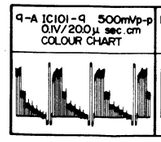
7-A IC101-7 500mVp-p 0.1V/200μ sec.cm COLOUR CHART



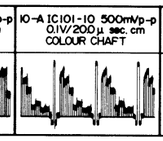
8-A IC101-8 500mVp-p 0.1V/20.0 μ sec.cm COLOUR CHART



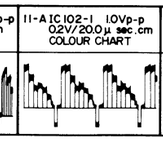
9-A IC101-9 500mVp-p 0.1V/20.0μ sec.cm COLOUR CHART



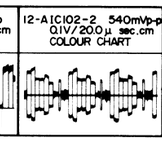
10-A IC101-10 500mVp-p 0.1V/20.0 μ sec.cm COLOUR CHAFT



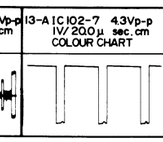
11-A IC102-1 1.0Vp-p 0.2V/20.0 μ sec.cm COLOUR CHART



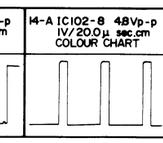
12-A IC102-2 540mVp-p 0.1V/20.0 μ sec.cm COLOUR CHART



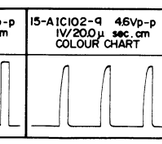
13-A IC102-7 4.3Vp-p 1V/20.0 μ sec.cm COLOUR CHART



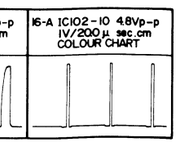
14-A IC102-8 4.8Vp-p 1V/20.0 μ sec.cm COLOUR CHART



15-A IC102-9 4.6Vp-p 1V/20.0 μ sec.cm COLOUR CHART



16-A IC102-10 4.8Vp-p 1V/200 μ sec.cm COLOUR CHART



17-A IC102-11 4.8Vp-p 1V/200 μ sec.cm COLOUR CHART

18-A IC102-12 4.8Vp-p 1V/200 μ sec.cm COLOUR CHART

19-A IC102-13 4.8Vp-p 1V/200 μ sec.cm COLOUR CHART

20-A IC102-18 4.8Vp-p 1V/5.0msec.cm COLOUR CHART

21-A IC102-19 5.3Vp-p 1V/200 μ sec.cm COLOUR CHART

22-A IC102-26 400mVp-p 0.1V/20.0 μ sec.cm COLOUR CHART

23-A IC102-28 300mVp-p 0.1V/20.0μ sec.cm COLOUR CHART

24-A IC112-37 300mVp-p 0.1V/20.0 μ sec.cm COLOUR CHART

25-A IC112-40 350mVp-p 0.1V/20.0 μ sec.cm COLOUR CHART

26-A IC113-1 530mVp-p 0.1V/20.0 μ sec.cm COLOUR CHART

27-A IC113-7 300mVp-p 0.1V/200 μ sec.cm COLOUR CHART

28-A IC113-9 400mVp-p 0.1V/20.0 μ sec.cm COLOUR CHART

29-A TP101-6 250mVp-p 50mV/20.0 μ sec.cm COLOUR CHART

30-A TP101-8 150mVp-p 50mV/20.0 μ sec.cm COLOUR CHART

31-A TP101-9 250mVp-p 50mV/200 μ sec.cm COLOUR CHART

32-A TP101-7 140mVp-p 50mV/20.0 μ sec.cm COLOUR CHART

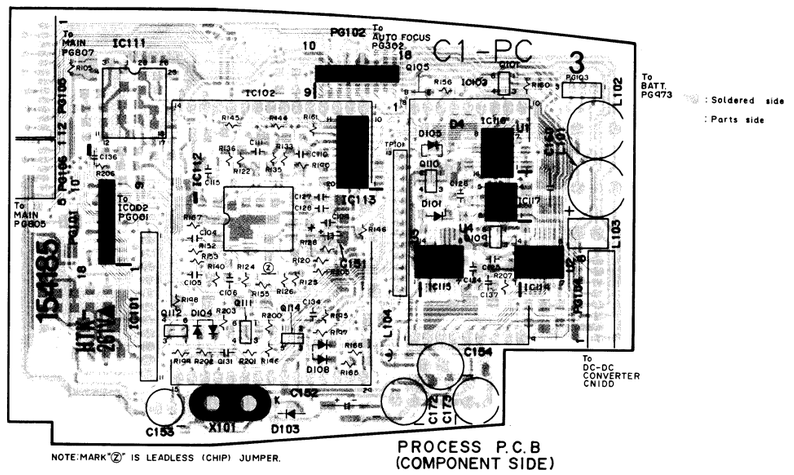
33-A TP101-3 500mVp-p 0.2V/200 μ sec.cm COLOUR CHART

34-A TP101-2 4.9Vp-p 1V/5.0msec.cm COLOUR CHART

35-A TP101-13 4.9Vp-p 1V/200 μ sec.cm COLOUR CHART

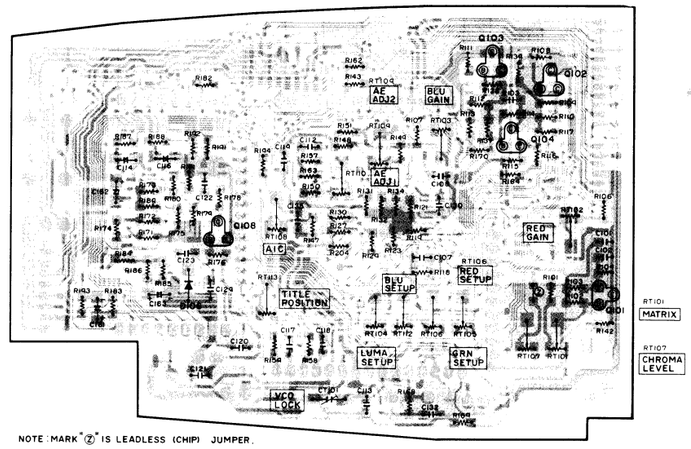
PROCESS 5-8　　5-9 PROCESS

PROCESS CIRCUIT BOARD (COMPONENT SIDE) PROZESS-LEITERPLATTE (BESTÜCKUNGSSEITE)



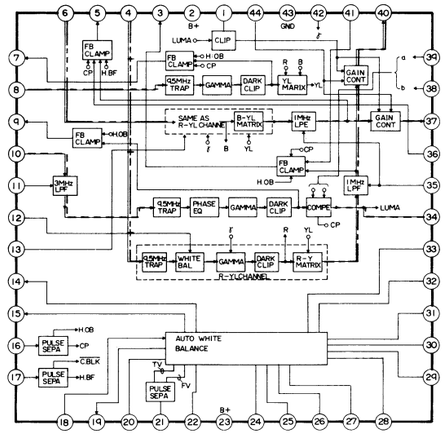
NOTE: MARK "②" IS LEADLESS (CHIP) JUMPER.

PROCESS CIRCUIT BOARD (SOLDER SIDE) PROZESS-LEITERPLATTE (LEITERBAHNSEITE)



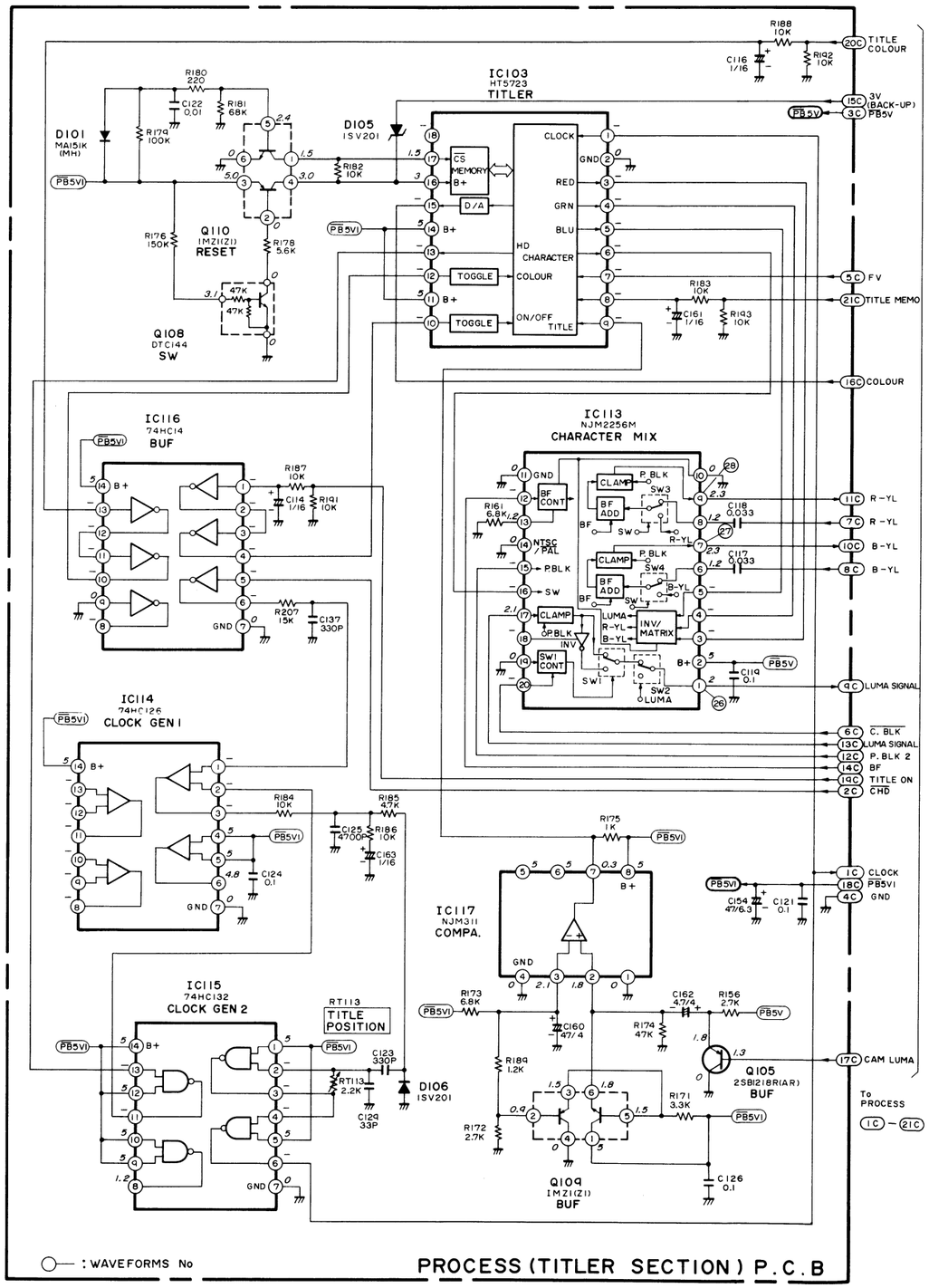
NOTE: MARK "②" IS LEADLESS (CHIP) JUMPER.

IC112 BLOCK DIAGRAM IC112 BLOCKSCHALTBILD

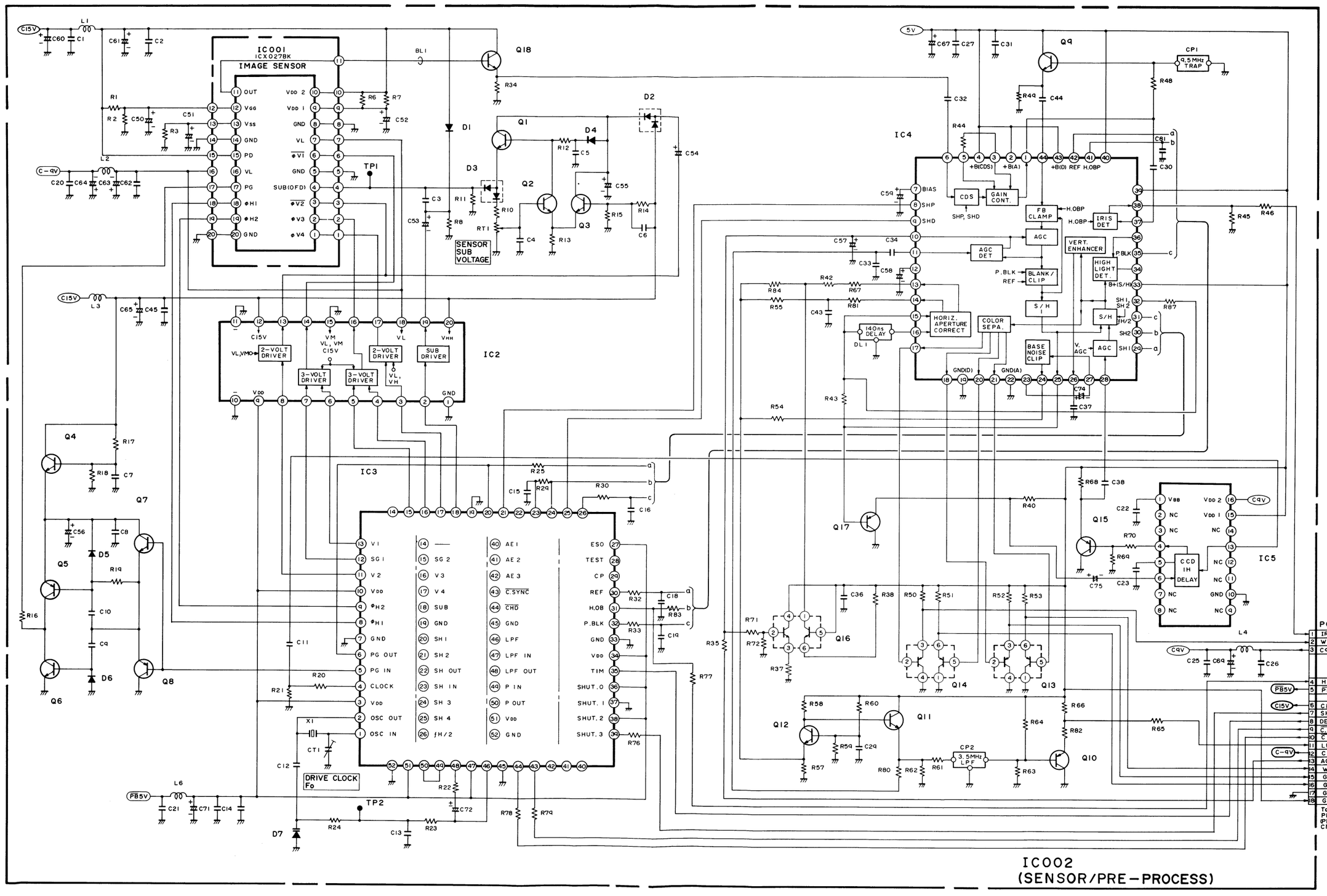


SCHEMATIC TITLE	PAGE
PROCESS (PROCESS)	5-8
PROCESS (TITLER)	5-11
IC002 (SENSOR/PRE-PROCESS) (REFERENCE)	5-12
CONTROL	5-14
DC-DC CONVERTER (REFERENCE)	5-15
FOCUS SENSOR (REFERENCE)	5-15
AUTOFOCUS (REFERENCE)	5-16
ELECTRONIC VIEWFINDER	5-18
POWER SUPPLY	5-19
MAIN (SYSTEM CONTROL)	5-20
MAIN (SERVO)	5-22
MAIN (PREAMP)	5-24
MAIN (LUMINANCE)	5-26
MAIN (CHROMA)	5-28
MAIN (AUDIO)	5-29
MOTOR DRIVE	5-32
CAPSTAN MOTOR (REFERENCE)	5-34
FUNCTION SWITCH (REFERENCE)	5-35
SWITCHING REGULATOR (REFERENCE)	5-35

PROCESS (TITLER SECTION) SCHEMATIC
PROZESS (TITELGENERATOR) SCHALTPLAN

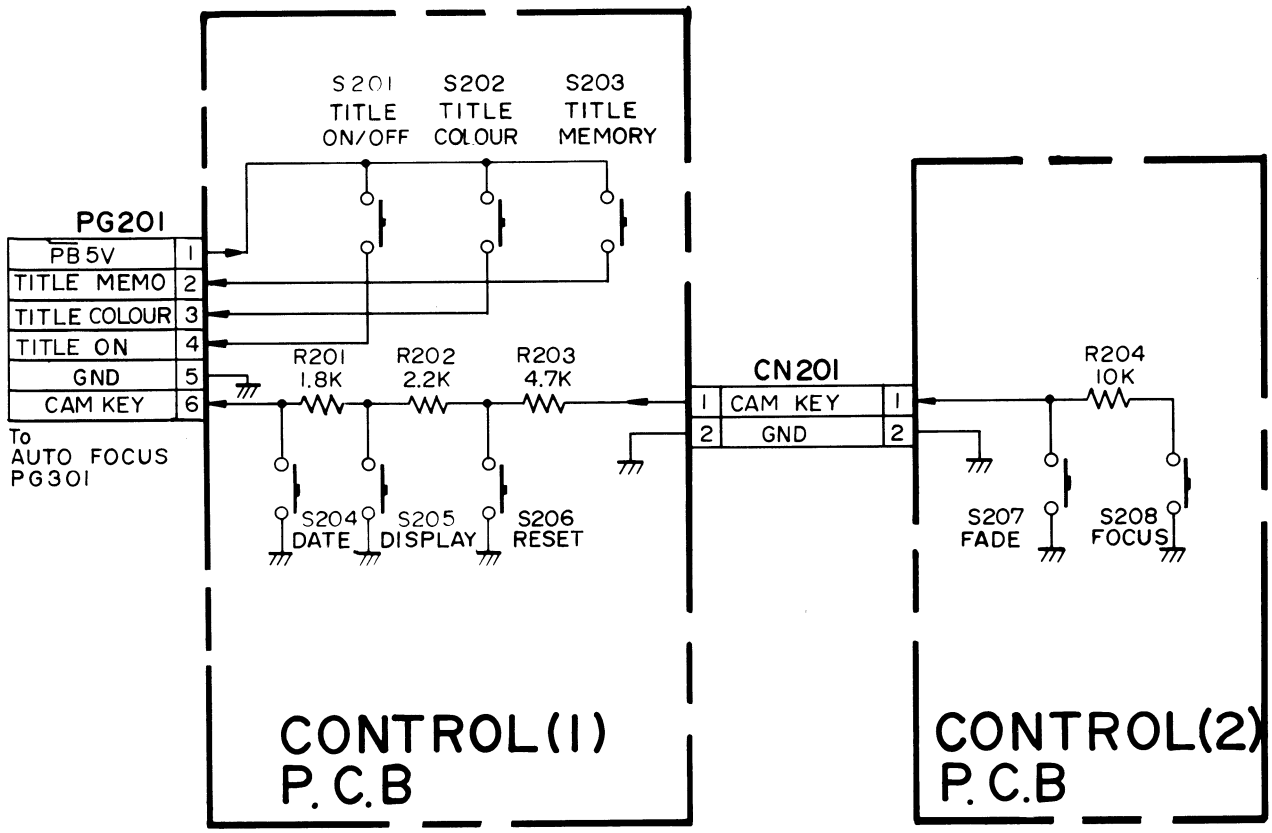


IC002 (SENSOR/PRE-PROCESS) SCHEMATIC (REFERENCE) IC002 (SENSOR/VORVERARBEITUNG) SCHALTPLAN (REFERENZ)

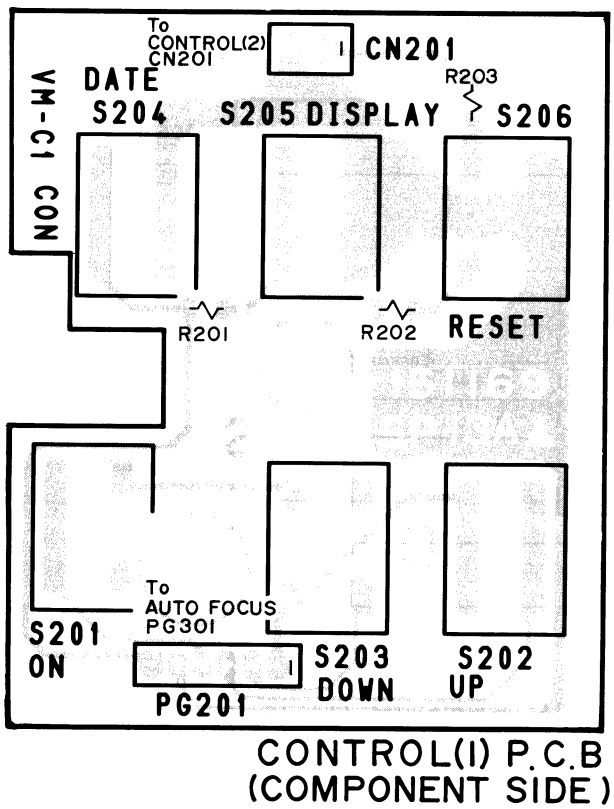


IC002
(SENSOR/PRE-PROCESS)

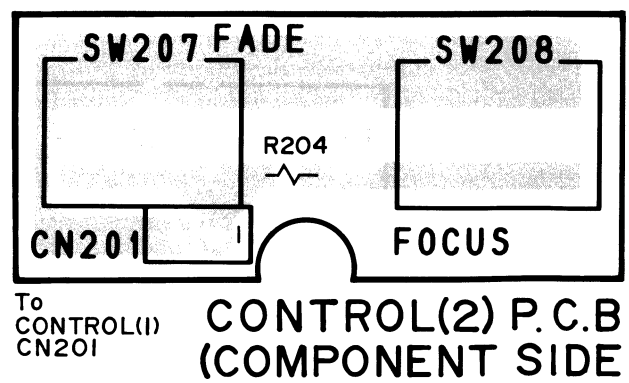
CONTROL (1), (2) SCHEMATIC REGLER (1), (2) SCHALTPLAN



CONTROL (1) CIRCUIT BOARD
REGLER (1) LEITERPLATTE

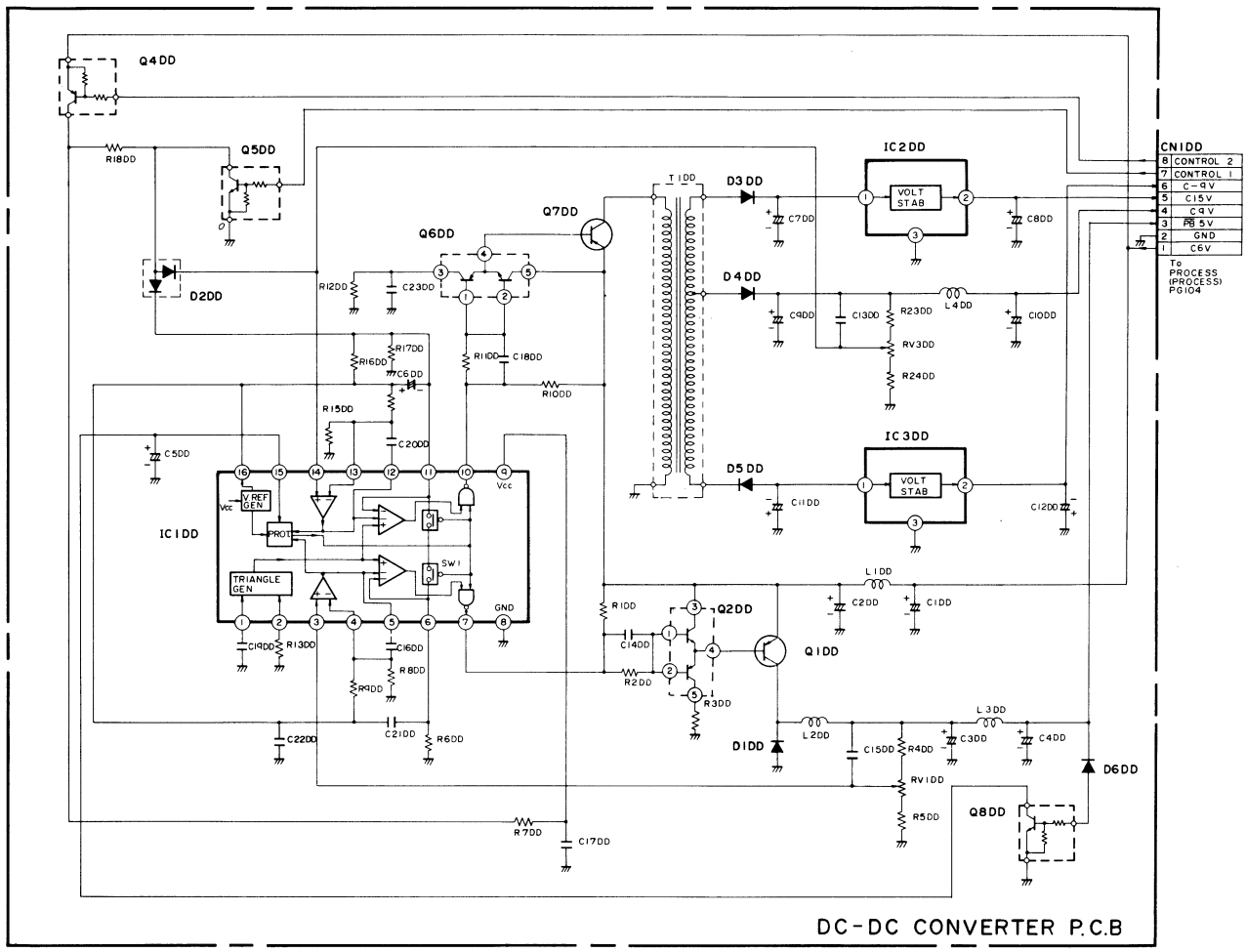


CONTROL (2) CIRCUIT BOARD
REGLER (2) LEITERPLATTE

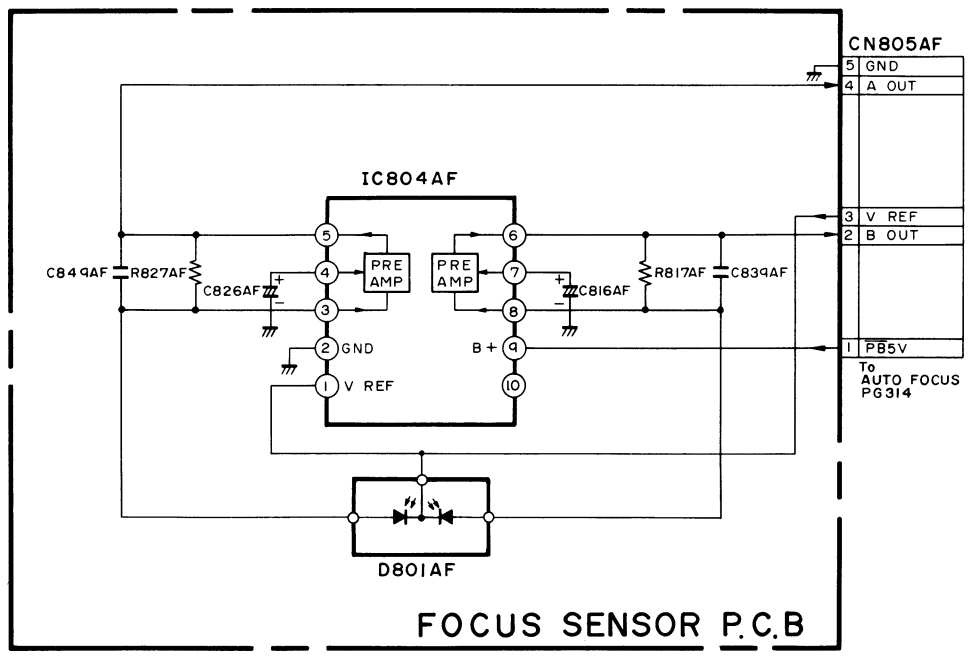


SCHEMATIC TITLE	PAGE	SCHEMATIC TITLE	PAGE
PROCESS (PROCESS)	5-8	MAIN (SERVO)	5-22
PROCESS (TITLER)	5-11	MAIN (PREAMP)	5-24
IC002 (SENSOR/PRE-PROCESS) *(REFERENCE)*	5-12	MAIN (LUMINANCE)	5-26
		MAIN (CHROMA)	5-28
CONTROL	5-14	MAIN (AUDIO)	5-29
DC-DC CONVERTER *(REFERENCE)*	5-15	MOTOR DRIVE	5-32
		CAPSTAN MOTOR *(REFERENCE)*	5-34
FOCUS SENSOR *(REFERENCE)*	5-15	FUNCTION SWITCH *(REFERENCE)*	5-35
AUTOFOCUS *(REFERENCE)*	5-16		
ELECTRONIC VIEWFINDER	5-18	SWITCHING REGULATOR *(REFERENCE)*	5-35
POWER SUPPLY	5-19		
MAIN (SYSTEM CONTROL)	5-20		

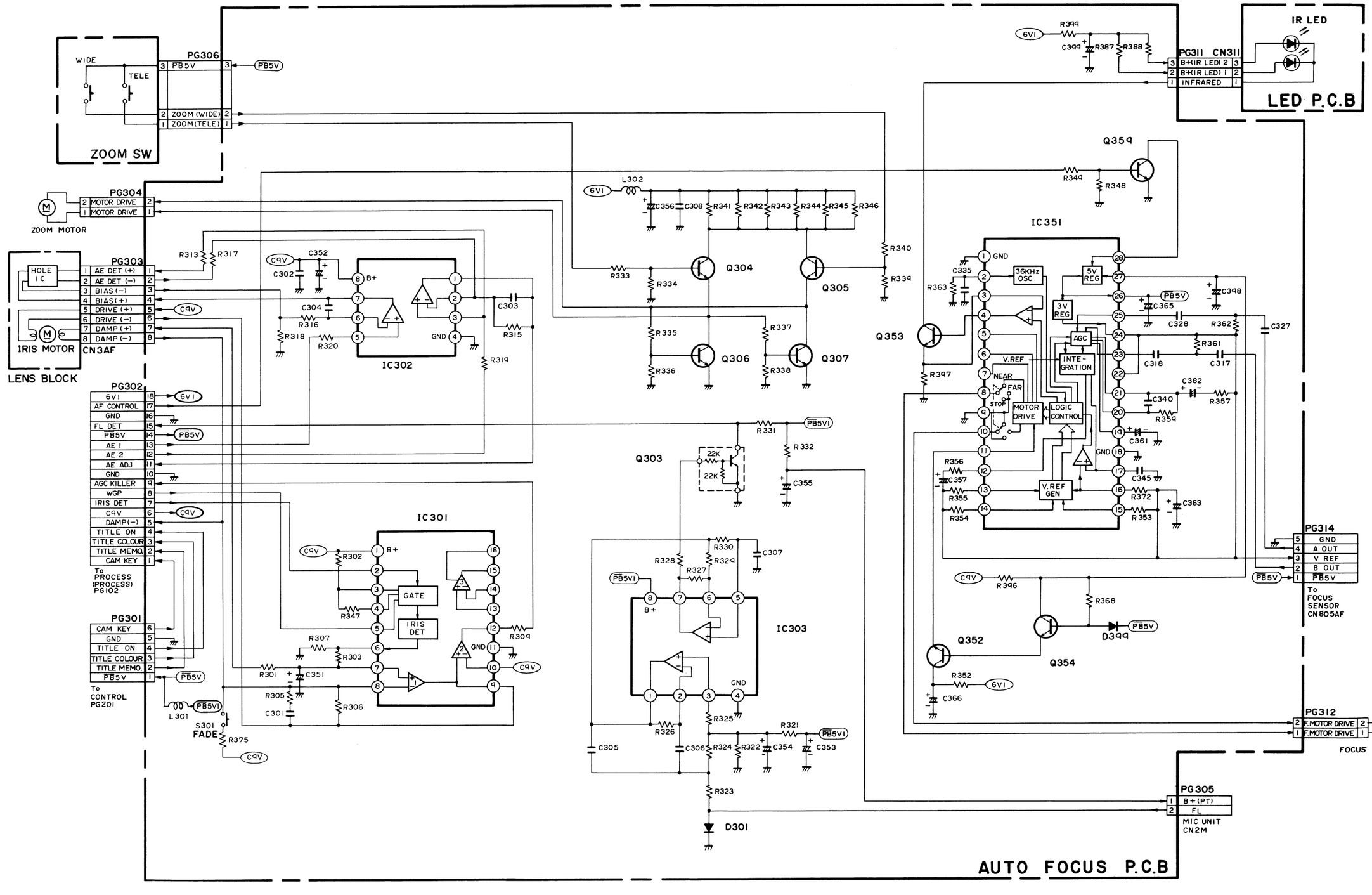
DC-DC CONVERTER SCHEMATIC (REFERENCE) GS/GS-UMFORMER-SCHALTPLAN (REFERENZ)



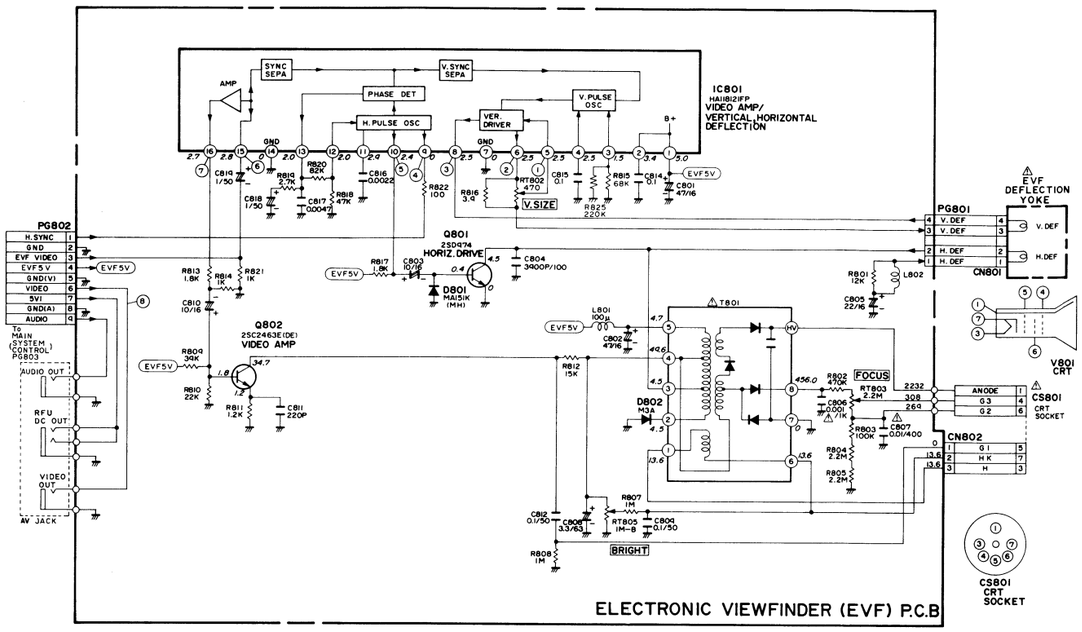
FOCUS SENSOR SCHEMATIC (REFERENCE) FOKUSSENSOR-SCHALTPLAN (REFERENZ)



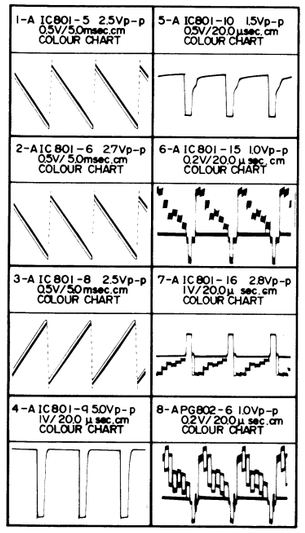
AUTOFOCUS/ZOOM SW/LED SCHEMATIC (REFERENCE) AUTOFOKUS/ZOOMSCHALTER/LED-SCHALTPLAN (REFERENZ)

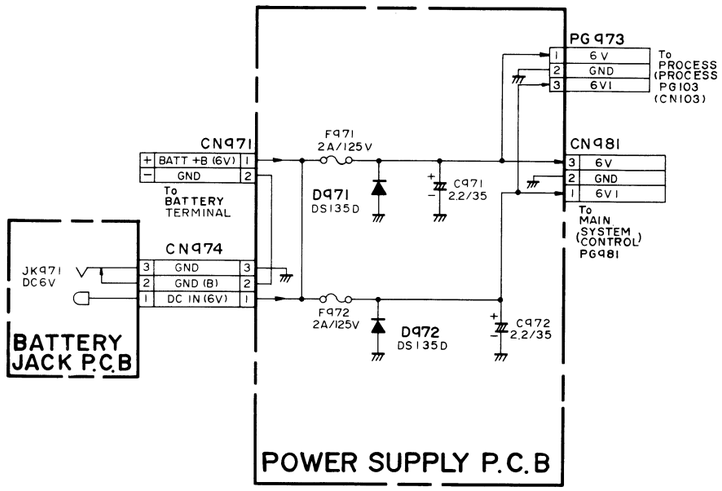


ELECTRONIC VIEWFINDER (EVF) SCHEMATIC　SCHALTPLAN DES ELEKTRONISCHEN SUCHERS

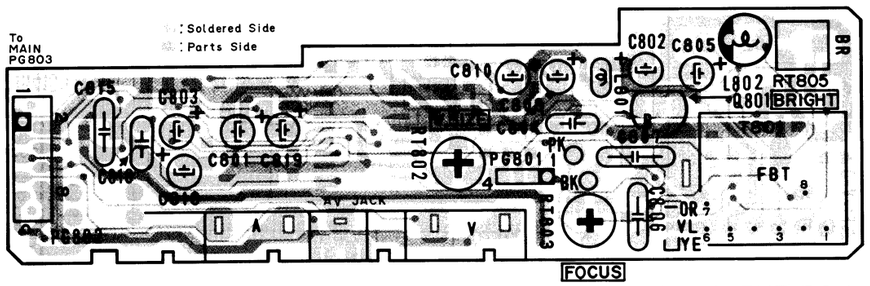


POWER SUPPLY/BATTERY JACK SCHEMATIC
STROMVERSORGUNG/AKKUBUCHSEN-SCHALTPLAN


1-A IC801-5 2.5Vp-p 0.5V/50msec.cm COLOUR CHART
5-A IC801-10 1.5Vp-p 0.5V/200μsec.cm COLOUR CHART
2-A IC801-6 2.7Vp-p 0.5V/50msec.cm COLOUR CHART
6-A IC801-15 1.0Vp-p 0.2V/200μsec.cm COLOUR CHART
3-A IC801-8 2.5Vp-p 0.5V/50msec.cm COLOUR CHART
7-A IC801-16 2.8Vp-p 1V/200μsec.cm COLOUR CHART
4-A IC801-9 5.0Vp-p 1V/200μsec.cm COLOUR CHART
8-A PG802-6 1.0Vp-p 0.2V/200μsec.cm COLOUR CHART

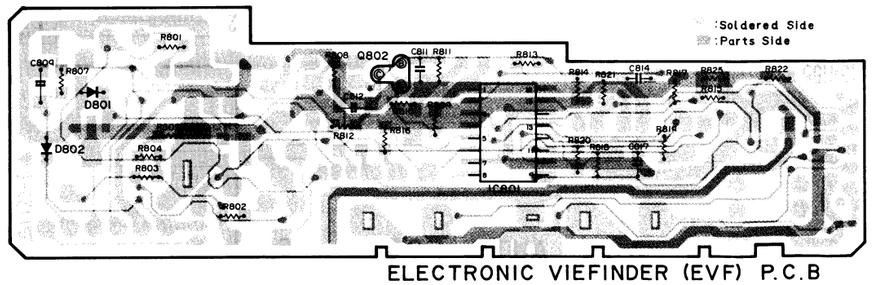


ELECTRONIC VIEWFINDER (EVF) CIRCUIT BOARD (COMPONENT SIDE)　LEITERPLATTE DES ELEKTRONISCHEN SUCHERS (BESTÜCKUNGSSEITE)



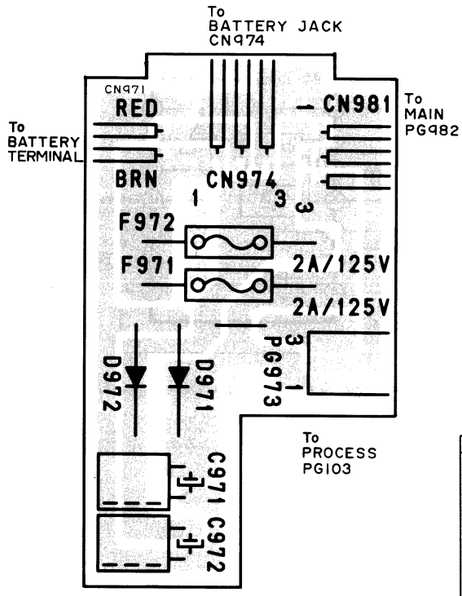
ELECTRONIC VIEWFINDER (EVF) P.C.B
(COMPONENT SIDE)

ELECTRONIC VIEWFINDER (EVF) CIRCUIT BOARD (SOLDER SIDE)　LEITERPLATTE DES ELEKTRONISCHEN SUCHERS (LEITERBAHNSEITE)

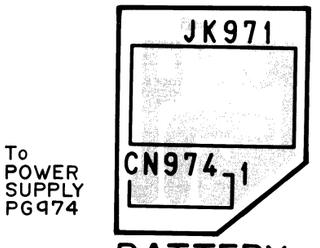


ELECTRONIC VIEFINDER (EVF) P.C.B
(SOLDER SIDE)

POWER SUPPLY CIRCUIT BOARD
STROMVERSORGUNGS-LEITERPLATTE

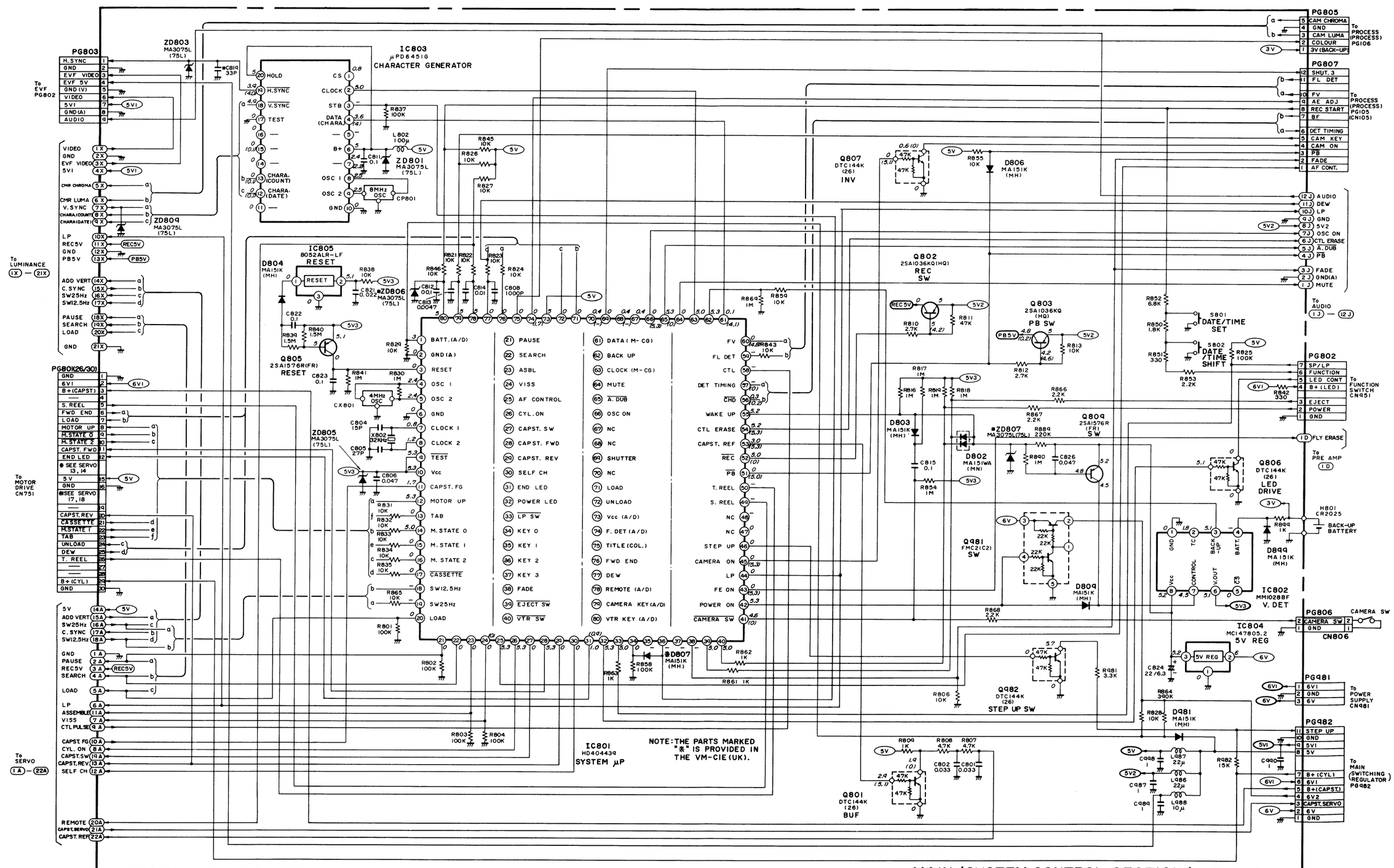


BATTERY JACK CIRCUIT BOARD
AKKUBUCHSEN-LEITERPLATTE

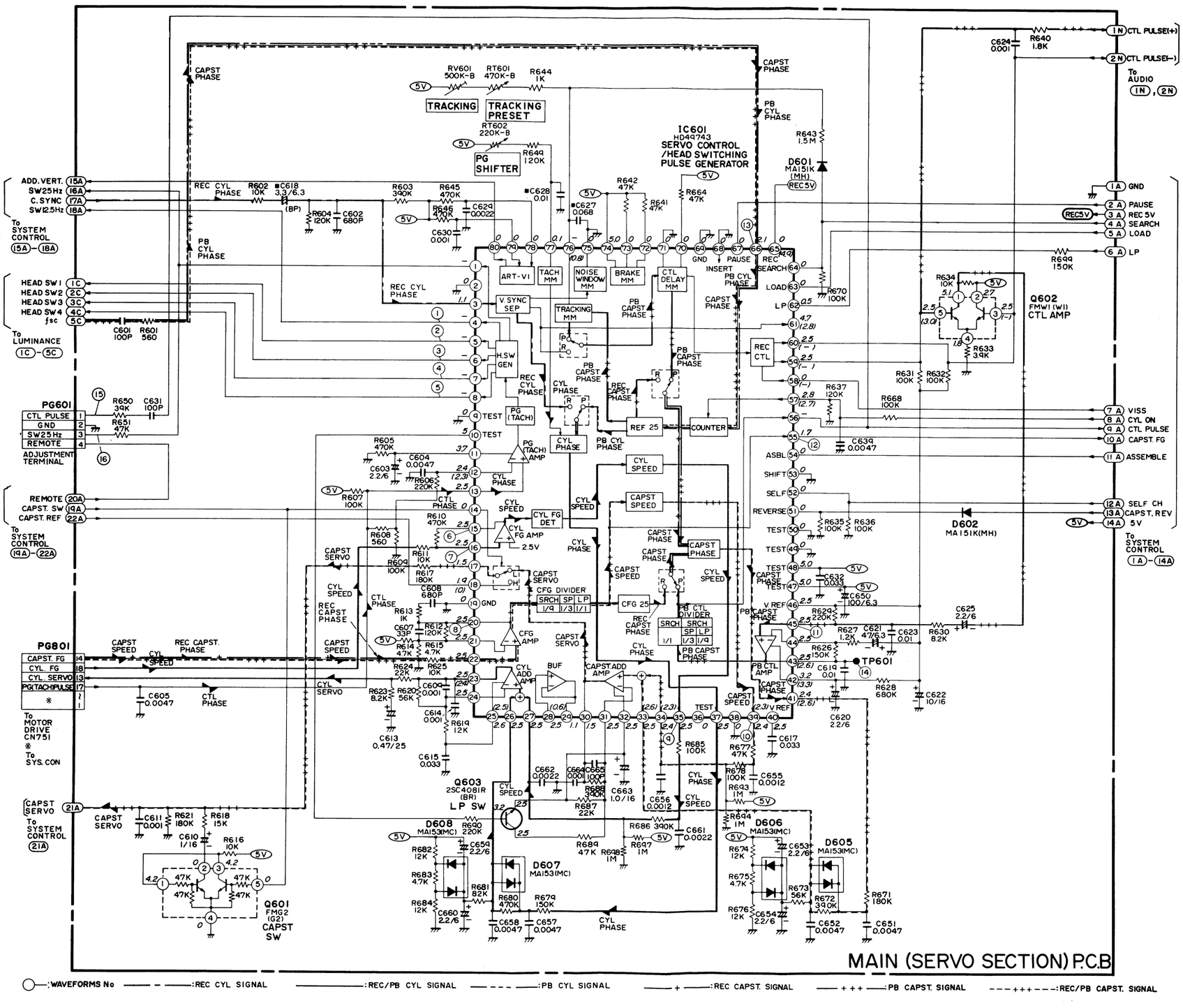


SCHEMATIC TITLE	PAGE	SCHEMATIC TITLE	PAGE
PROCESS (PROCESS)	5-8	MAIN (SERVO)	5-22
PROCESS (TITLER)	5-11	MAIN (PREAMP)	5-24
IC002 (SENSOR/PRE-PROCESS) *(REFERENCE)*	5-12	MAIN (LUMINANCE)	5-26
		MAIN (CHROMA)	5-28
CONTROL	5-14	MAIN (AUDIO)	5-29
DC-DC CONVERTER *(REFERENCE)*	5-15	MOTOR DRIVE	5-32
		CAPSTAN MOTOR *(REFERENCE)*	5-34
FOCUS SENSOR *(REFERENCE)*	5-15	FUNCTION SWITCH *(REFERENCE)*	5-35
AUTOFOCUS *(REFERENCE)*	5-16		
ELECTRONIC VIEWFINDER	5-18	SWITCHING REGULATOR *(REFERENCE)*	5-35
POWER SUPPLY	5-19		
MAIN (SYSTEM CONTROL)	5-20		

MAIN (SYSTEM CONTROL SECTION) SCHEMATIC HAUPT- (SYSTEMREGELUNGSABSCHNITT) SCHALTPLAN

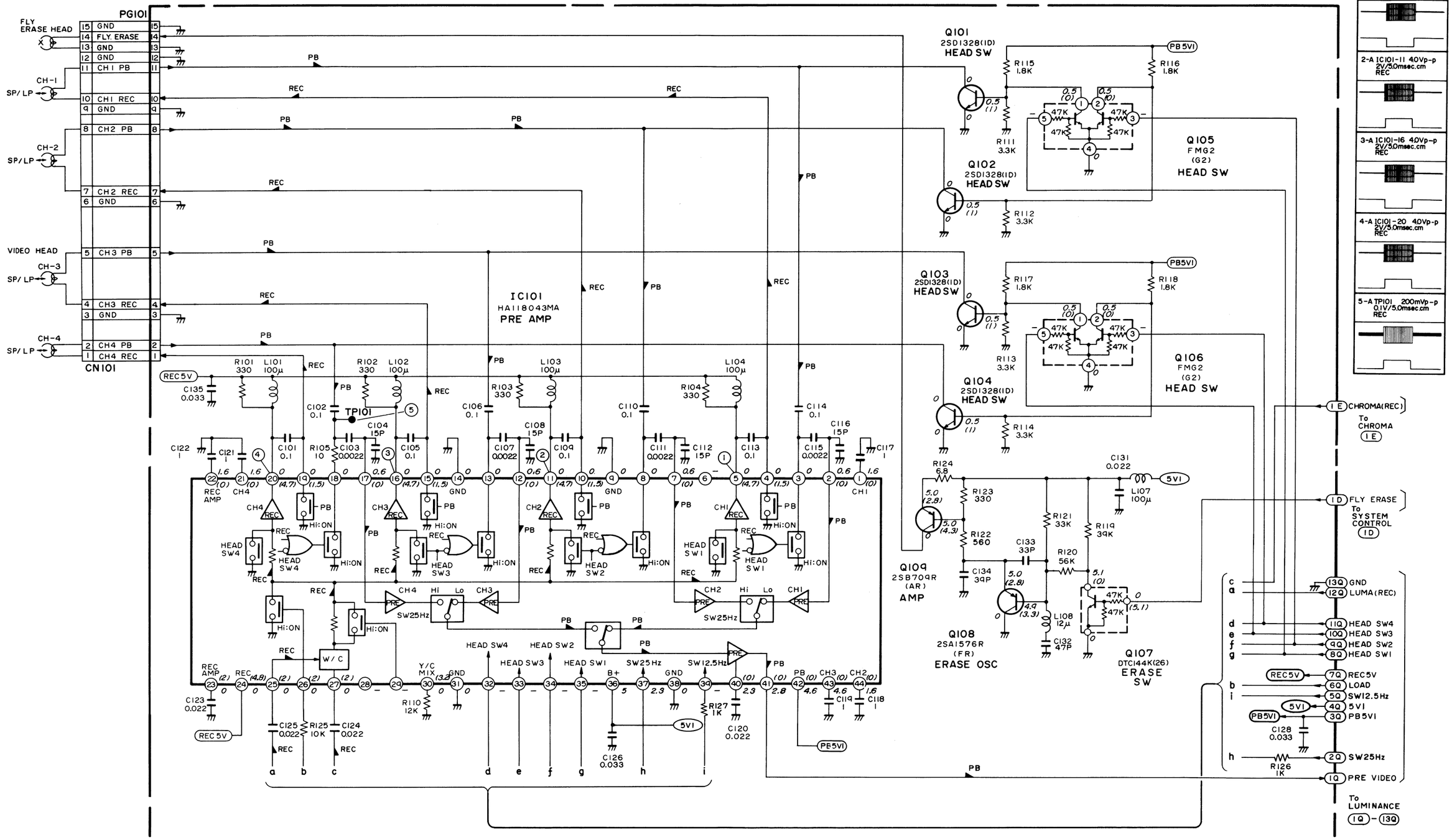


MAIN (SERVO SECTION) SCHEMATIC HAUPT- (SERVOABSCHNITT) SCHALTPLAN



1-A IC601-4 5.5Vp-p 1V/20.0msec.cm REC/PLAY	8-A IC601-20 5.0Vp-p 1V/200μ sec.cm REC/PLAY
2-A IC601-5 5.0Vp-p 1V/20.0msec.cm REC	9-A IC601-35 1.2Vp-p 0.5V/200μ sec.cm REC/PLAY
2-B IC601-5 5.0Vp-p 1V/20.0msec.cm PLAY	10-A IC601-39 1.2Vp-p 0.5V/200μ sec.cm REC/PLAY
3-A IC601-6 5.0Vp-p 1V/20.0msec.cm	11-A IC601-45 850mVp-p 0.2V/10.0msec.cm REC
3-B IC601-6 5.0Vp-p 1V/20.0msec.cm PLAY	12-A IC601-55 5.0Vp-p 2V/500μ sec.cm REC/PLAY
4-A IC601-7 5.0Vp-p 1V/20.0msec.cm REC	13-A IC601-66 650mVp-p 0.2V/200μ sec.cm REC/PLAY
4-B IC601-7 5.0Vp-p 1V/20.0msec.cm PLAY	14-A TP601 2.0Vp-p 0.5V/10.0msec.cm REC
5-A IC601-8 5.0Vp-p 1V/20.0msec.cm REC	14-B TP601 3.4Vp-p 1V/10.0msec.cm PLAY
5-B IC601-8 5.0Vp-p 1V/20.0msec.cm PLAY	15-A PG601-1 8.5Vp-p 2V/10.0msec.cm REC/PLAY
6-A IC601-15 5.0Vp-p 1V/500μ sec.cm REC/PLAY	16-A PG601-3 5.2Vp-p 1V/10.0msec.cm REC/PLAY
7-A IC601-16 2.2Vp-p 0.5V/500μ sec.cm REC/PLAY	

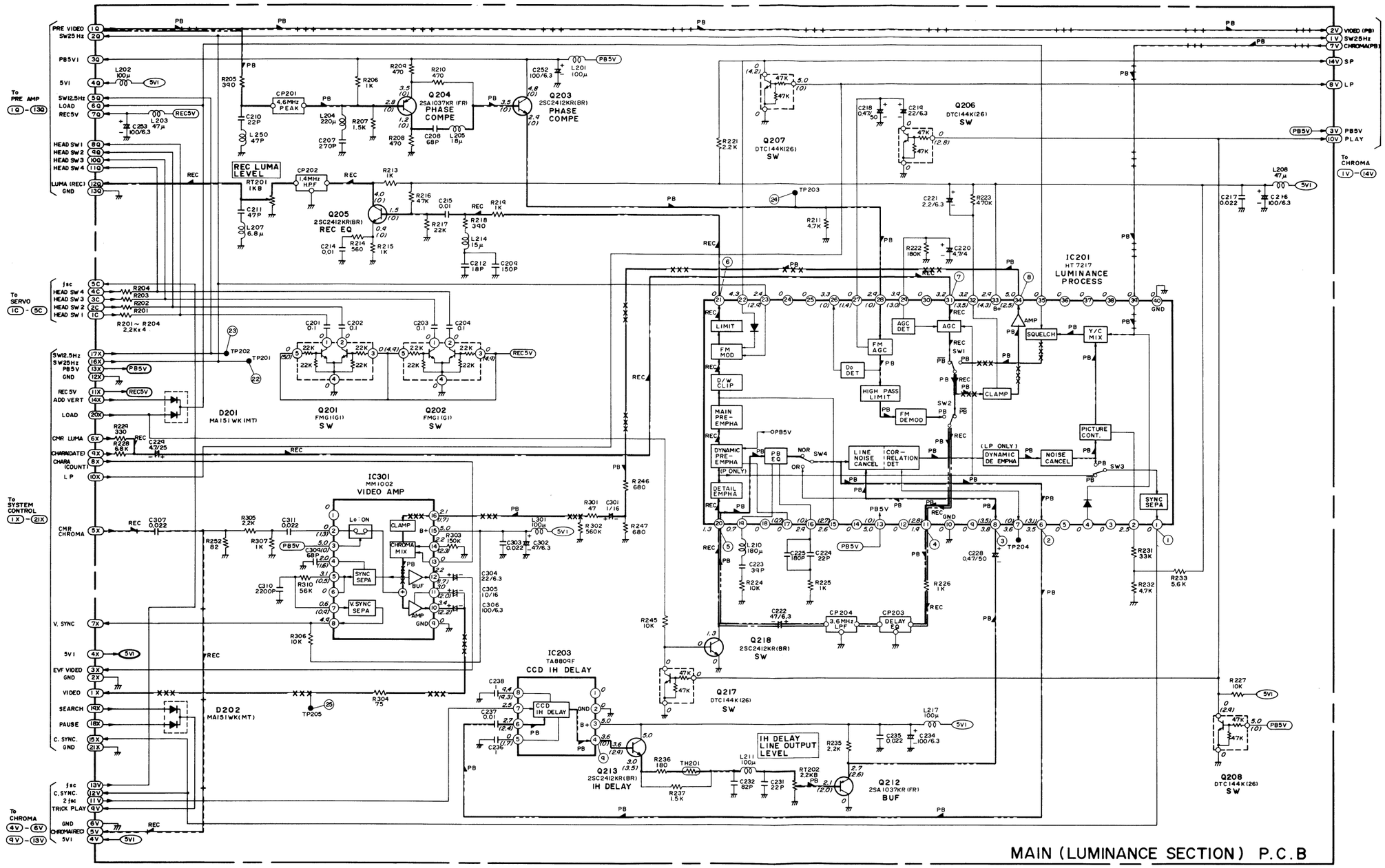
MAIN (PRE-AMP SECTION) SCHEMATIC HAUPT- (VORVERSTÄRKERABSCHNITT) SCHALTPLAN



○— : WAVEFORMS No.

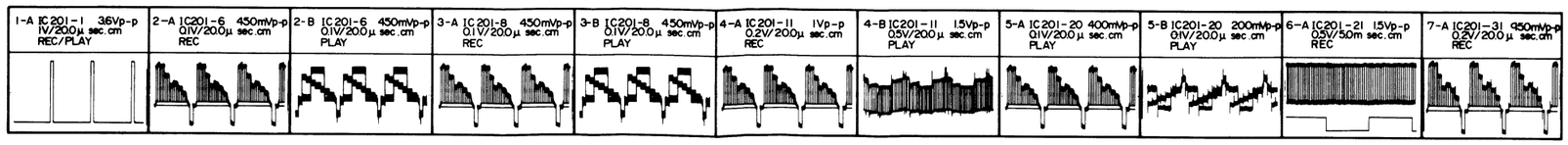
MAIN(PRE AMP SECTION) P.C.B

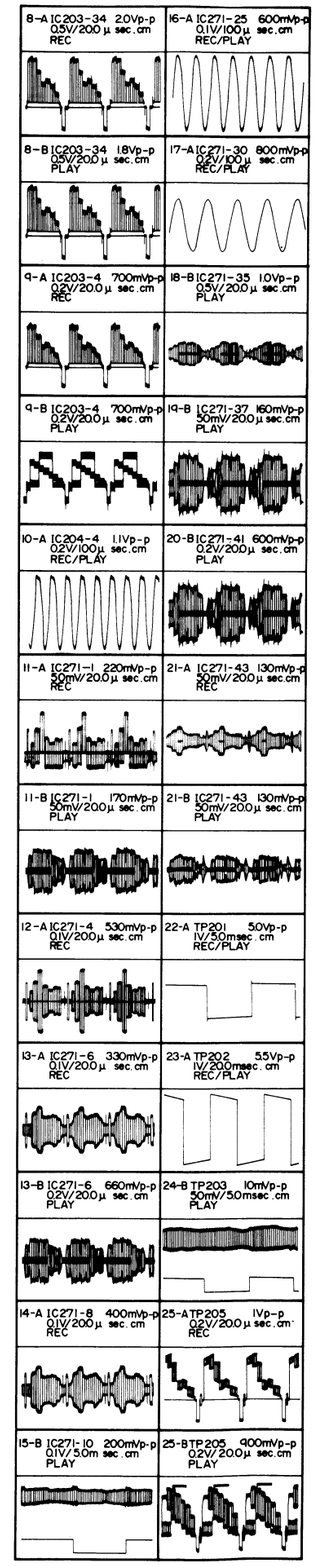
MAIN (LUMINANCE SECTION) SCHEMATIC HAUPT- (LUMINNZABSCHNITT) SCHALTPLAN



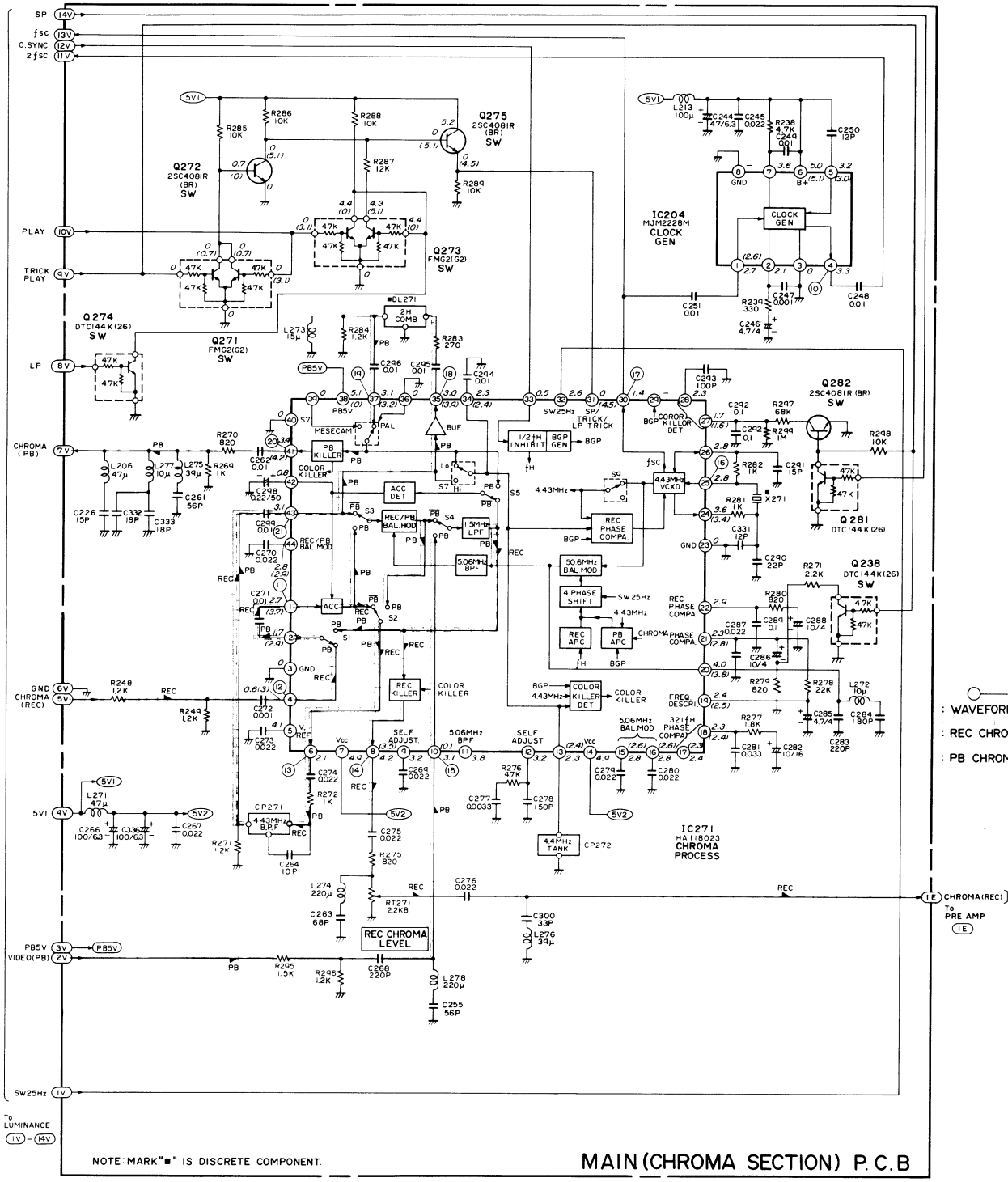
—— - ——: REC LUMA SIGNAL ---- + ---: REC CHROMA SIGNAL —— - - - ——: PB LUMA SIGNAL --- +++ ---: PB CHROMA SIGNAL —— xxx ——: PB VIDEO SIGNAL ○— : WAVEFORM No

MAIN (LUMINANCE SECTION) P.C.B

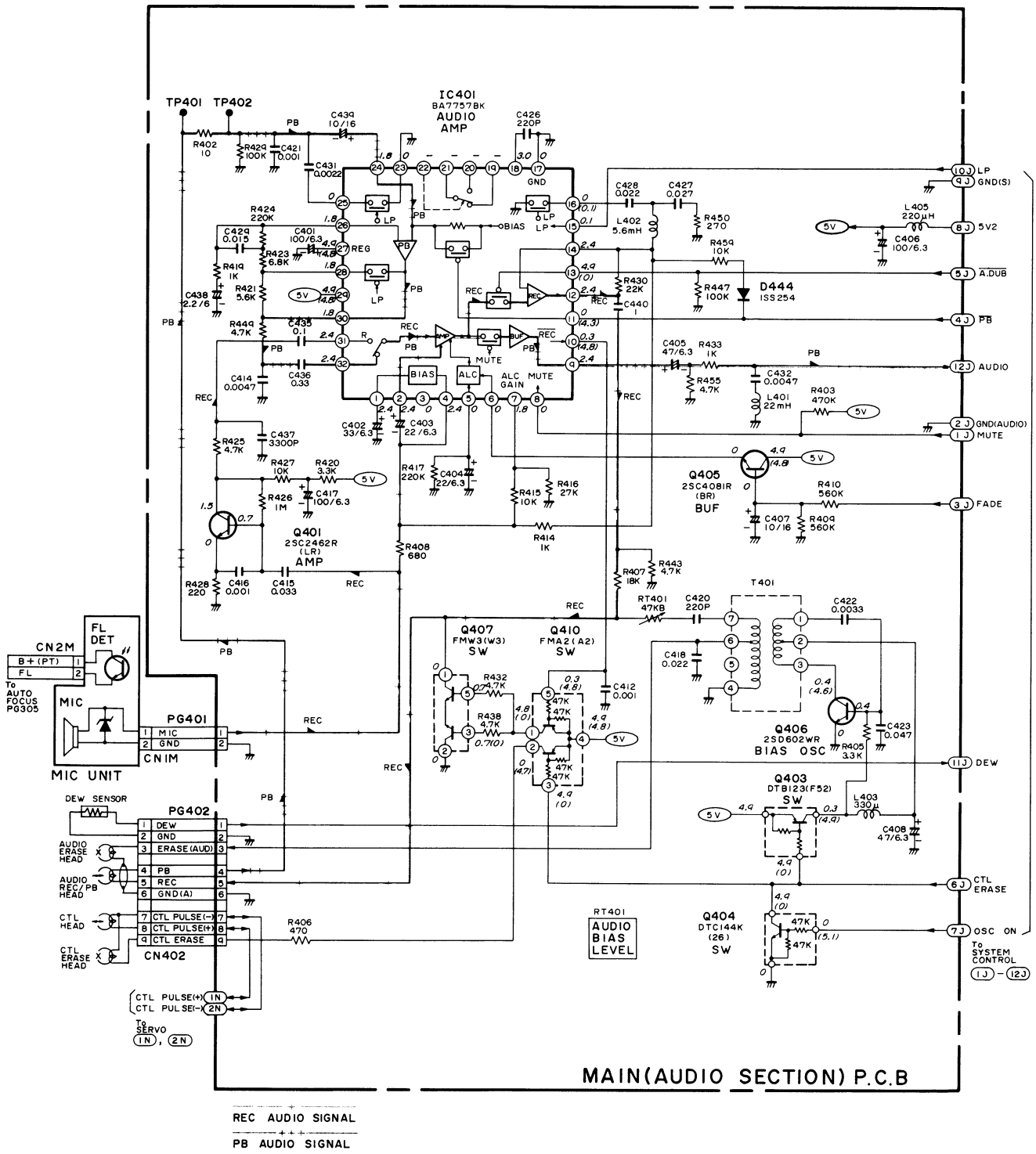

1-A IC201-1 3.6Vp-p 1V/200μ sec.cm REC/PLAY
2-A IC201-6 450mVp-p 0.1V/20.0μ sec.cm REC
2-B IC201-6 450mVp-p 0.1V/20.0μ sec.cm PLAY
3-A IC201-8 450mVp-p 0.1V/20.0μ sec.cm REC
3-B IC201-8 450mVp-p 0.1V/20.0μ sec.cm PLAY
4-A IC201-11 1Vp-p 0.2V/20.0μ sec.cm REC
4-B IC201-11 1.5Vp-p 0.5V/20.0μ sec.cm PLAY
5-A IC201-20 400mVp-p 0.1V/20.0μ sec.cm PLAY
5-B IC201-20 200mVp-p 0.1V/20.0μ sec.cm PLAY
6-A IC201-21 1.5Vp-p 0.5V/50m sec.cm REC
7-A IC201-31 950mVp-p 0.2V/20.0μ sec.cm REC


8-A IC203-34 2.0Vp-p 0.5V/20.0μ sec.cm REC
16-A IC271-25 600mVp-p 0.1V/100μ sec.cm REC/PLAY
8-B IC203-34 1.8Vp-p 0.5V/20.0μ sec.cm PLAY
17-A IC271-30 800mVp-p 0.2V/100μ sec.cm REC/PLAY
9-A IC203-4 700mVp-p 0.2V/20.0μ sec.cm REC
18-B IC271-35 1.0Vp-p 0.5V/20.0μ sec.cm PLAY
9-B IC203-4 700mVp-p 0.2V/20.0μ sec.cm PLAY
19-B IC271-37 160mVp-p 50mV/20.0μ sec.cm PLAY
10-A IC204-4 1.1Vp-p 0.2V/100μ sec.cm REC/PLAY
20-B IC271-41 600mVp-p 0.2V/20.0μ sec.cm PLAY
11-A IC271-1 220mVp-p 50mV/20.0μ sec.cm REC
21-A IC271-43 130mVp-p 50mV/20.0μ sec.cm REC
11-B IC271-1 170mVp-p 50mV/20.0μ sec.cm PLAY
21-B IC271-43 130mVp-p 50mV/20.0μ sec.cm PLAY
12-A IC271-4 530mVp-p 0.1V/20.0μ sec.cm REC
22-A TP201 50Vp-p 1V/50msec.cm REC/PLAY
13-A IC271-6 330mVp-p 0.1V/20.0μ sec.cm REC
23-A TP202 55Vp-p 1V/20.0msec.cm REC/PLAY
13-B IC271-6 660mVp-p 0.2V/20.0μ sec.cm PLAY
24-B TP203 10mVp-p 50mV/50.0msec.cm PLAY
14-A IC271-8 400mVp-p 0.1V/20.0μ sec.cm REC
25-A TP205 1Vp-p 0.2V/20.0μ sec.cm REC
15-B IC271-10 200mVp-p 0.1V/5.0m sec.cm PLAY
25-B TP205 900mVp-p 0.2V/20.0μ sec.cm PLAY

MAIN (CHROMA SECTION) SCHEMATIC HAUPT- (CHROMAABSCHNITT) SCHALTPLAN

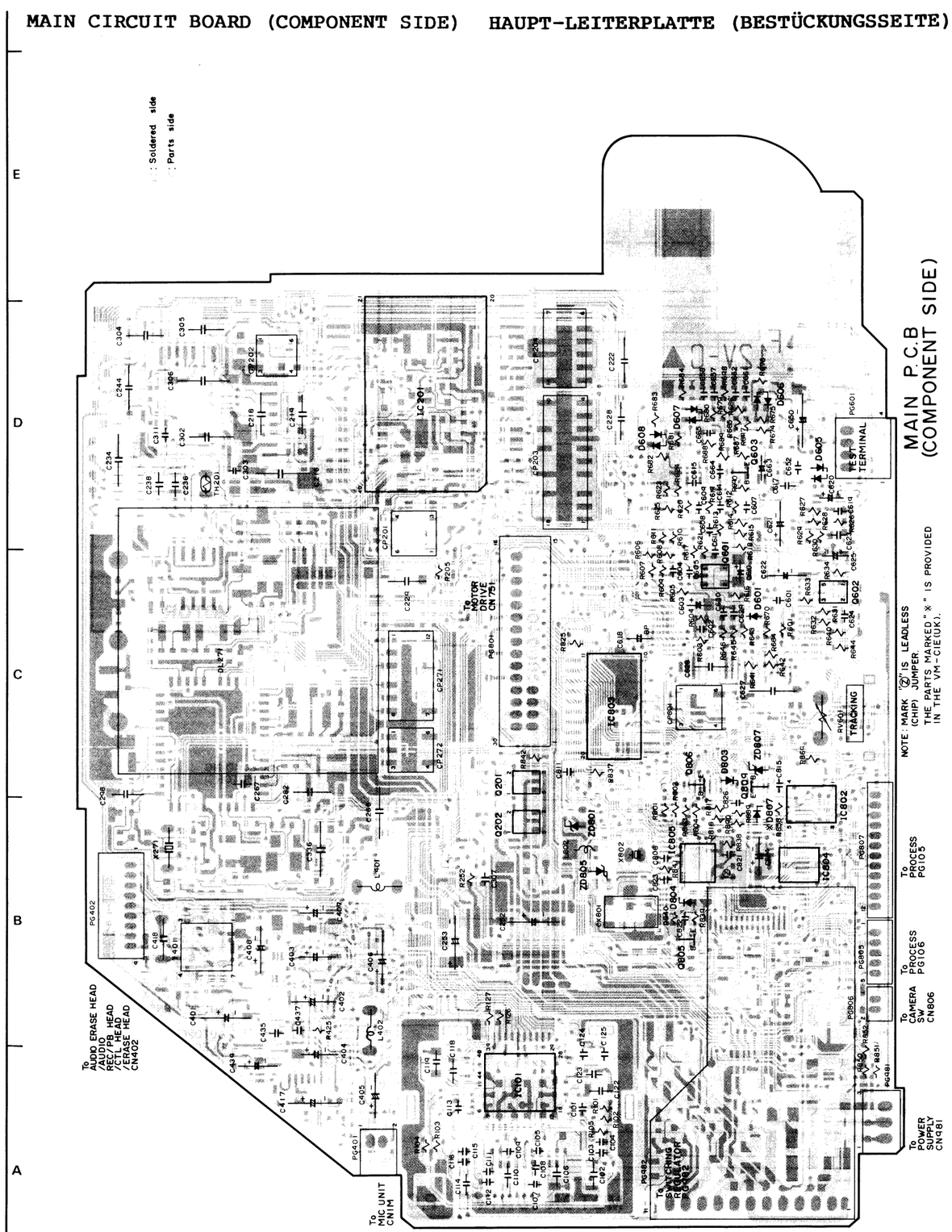


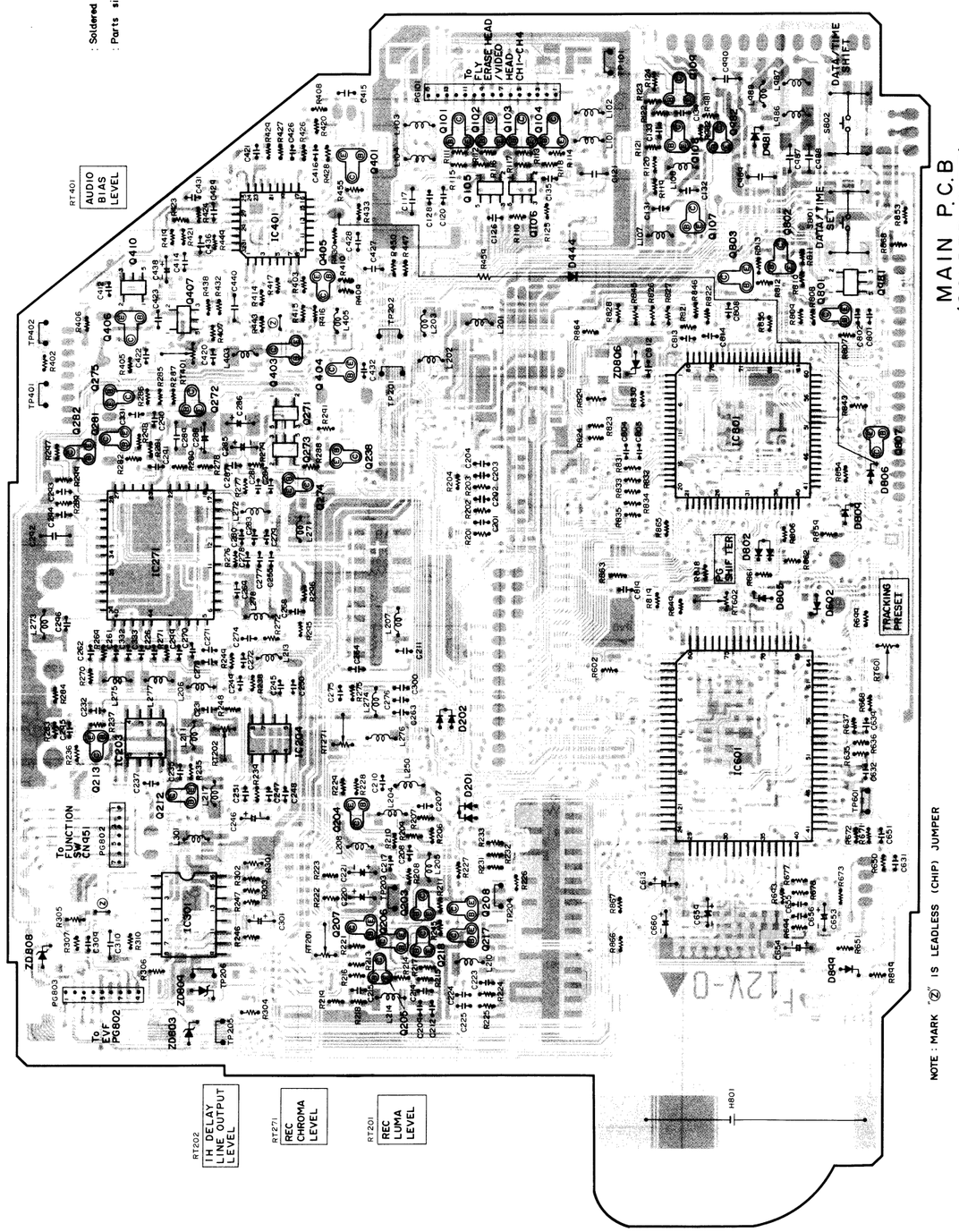
MAIN (AUDIO SECTION) SCHEMATIC HAUPT- (AUDIOABSCHNITT) SCHALTPLAN



MAIN CIRCUIT BOARD (COMPONENT SIDE) HAUPT-LEITERPLATTE (BESTÜCKUNGSSEITE)

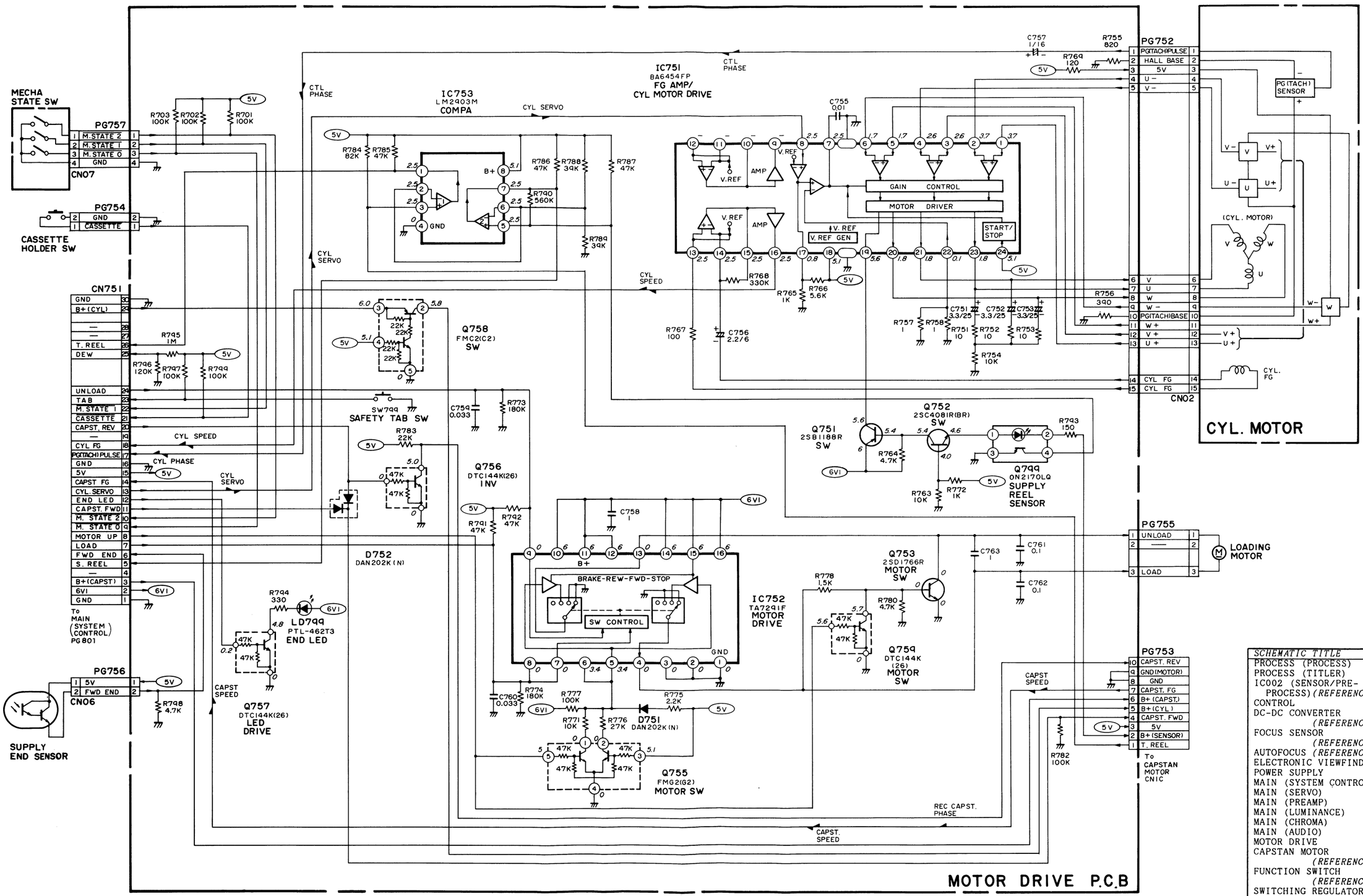
MAIN CIRCUIT BOARD (SOLDER SIDE) HAUPT-LEITERPLATTE (LEITERBAHNSEITE)


: Soldered side
: Parts side
MAIN P.C.B (COMPONENT SIDE)
NOTE : MARK "Ⓩ" IS LEADLESS (CHIP) JUMPER.
THE PARTS MARKED "×" IS PROVIDED IN THE VM-C1E(UK).
To AUDIO ERASE HEAD /AUDIO REC HEAD /CTL HEAD /ERASE HEAD CN402
To MIC UNIT CN1M
To MOTOR DRIVE CN751
To SWITCHING REGULATOR CN482
To POWER SUPPLY CN481
To PROCESS PG105
To PROCESS PG106
To CAMERA SW CN806
TRACKING
REST TERMINAL


: Soldered side
: Parts side
MAIN P.C.B (SOLDER SIDE)
NOTE : MARK "Ⓩ" IS LEADLESS (CHIP) JUMPER
RT401 AUDIO BIAS LEVEL
To FLY ERASE HEAD /VIDEO HEAD-CH1/CH4
DATA TIME SHIFT
DATA TIME SET
TRACKING PRESET
RT202 1H DELAY LINE OUTPUT LEVEL
RT271 REC CHROMA LEVEL
RT201 REC LUMA LEVEL

MAIN 5-30 5-31 MAIN

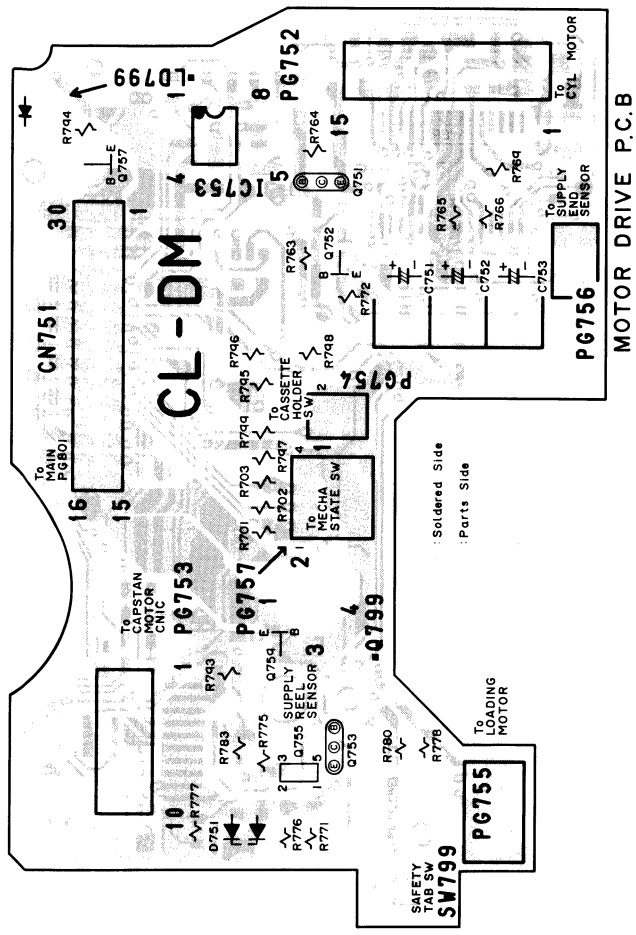
MOTOR DRIVE SCHEMATIC MOTORTREIBER-SCHALTPLAN



SCHEMATIC TITLE	PAGE
PROCESS (PROCESS)	5-8
PROCESS (TITLER)	5-11
IC002 (SENSOR/PRE-PROCESS) *(REFERENCE)*	5-12
CONTROL	5-14
DC-DC CONVERTER *(REFERENCE)*	5-15
FOCUS SENSOR *(REFERENCE)*	5-15
AUTOFOCUS *(REFERENCE)*	5-16
ELECTRONIC VIEWFINDER	5-18
POWER SUPPLY	5-19
MAIN (SYSTEM CONTROL)	5-20
MAIN (SERVO)	5-22
MAIN (PREAMP)	5-24
MAIN (LUMINANCE)	5-26
MAIN (CHROMA)	5-28
MAIN (AUDIO)	5-29
MOTOR DRIVE	5-32
CAPSTAN MOTOR *(REFERENCE)*	5-34
FUNCTION SWITCH *(REFERENCE)*	5-35
SWITCHING REGULATOR *(REFERENCE)*	5-35

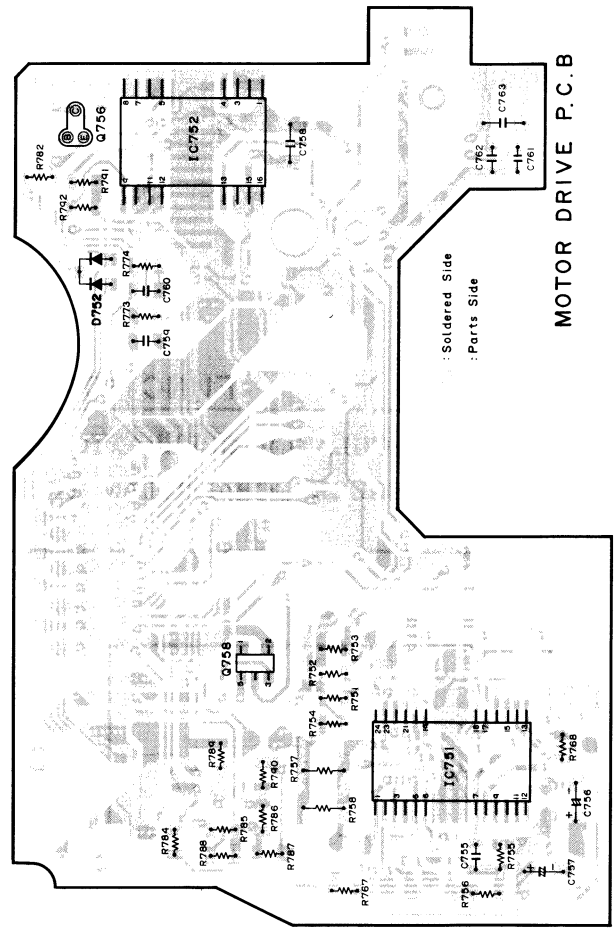
MOTOR DRIVE CIRCUIT BOARD
(COMPONENT SIDE)

MOTORTREIBER-LEITERPLATTE
(BESTÜCKUNGSSEITE)



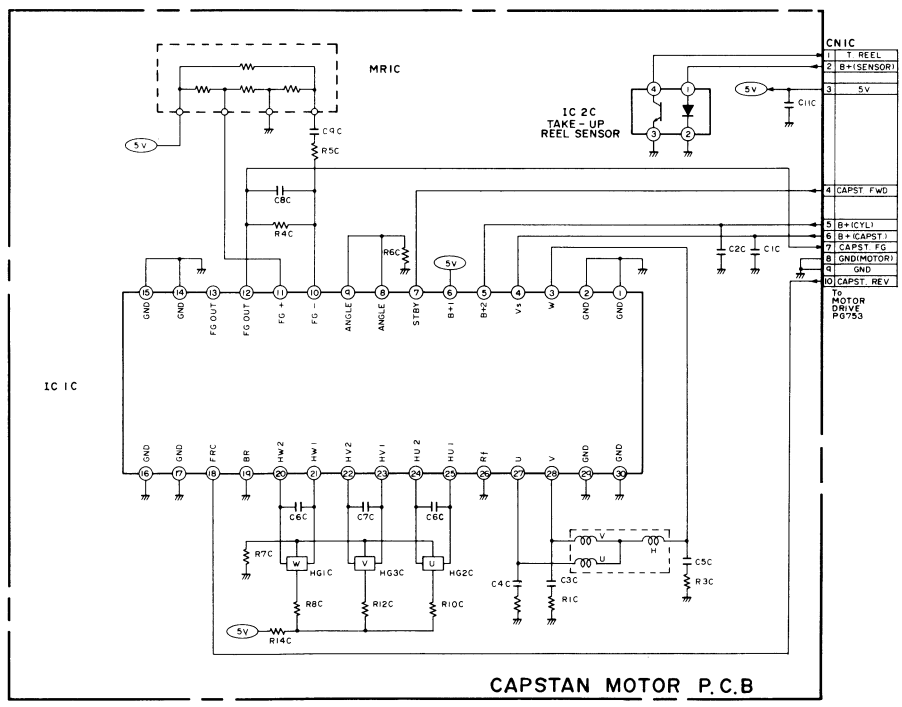
MOTOR DRIVE CIRCUIT BOARD
(SOLDER SIDE)

MOTORTREIBER-LEITERPLATTE
(LEITERBAHNSEITE)

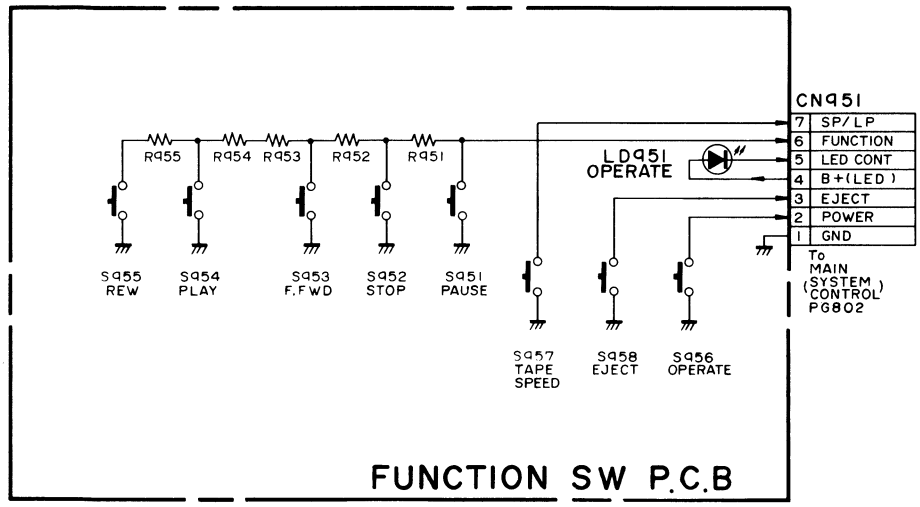


CAPSTAN MOTOR SCHEMATIC (REFERENCE)

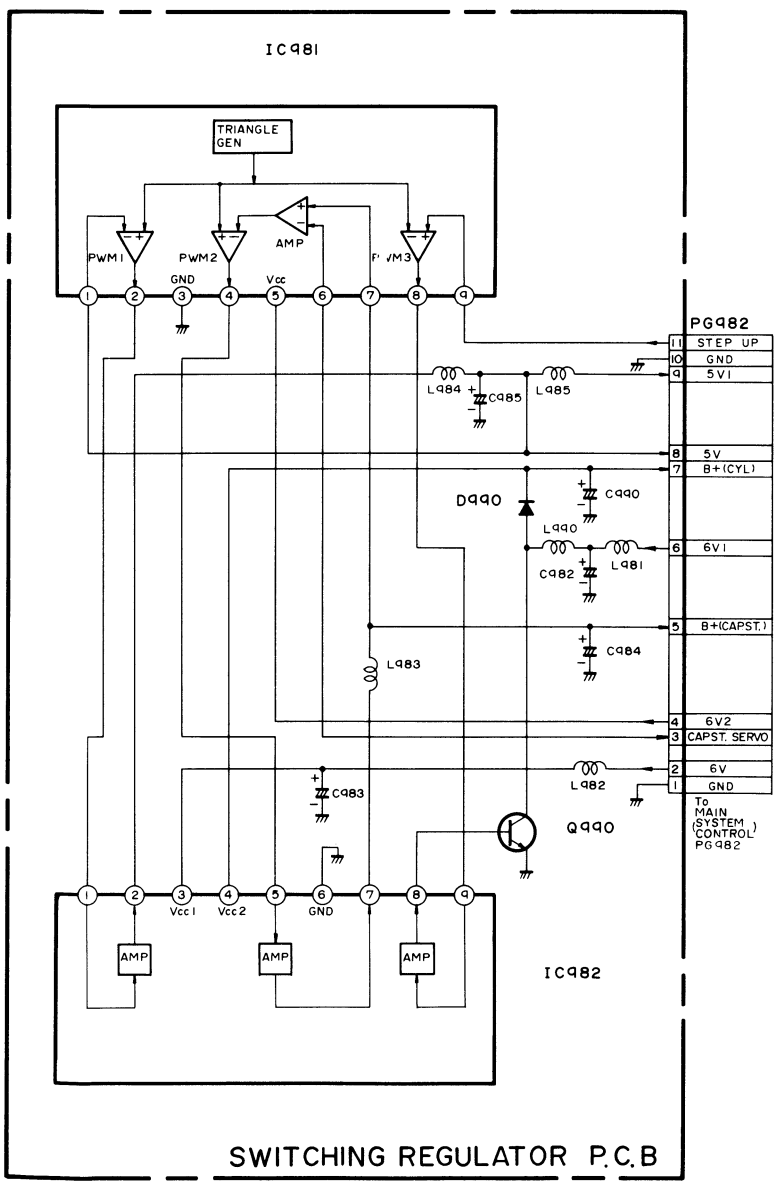
CAPSTANMOTOR-SCHALTPLAN (REFERENZ)



FUNCTION SWITCH SCHEMATIC (REFERENCE)
FUNKTIONSSCHALTER-SCHALTPLAN (REFERENZ)

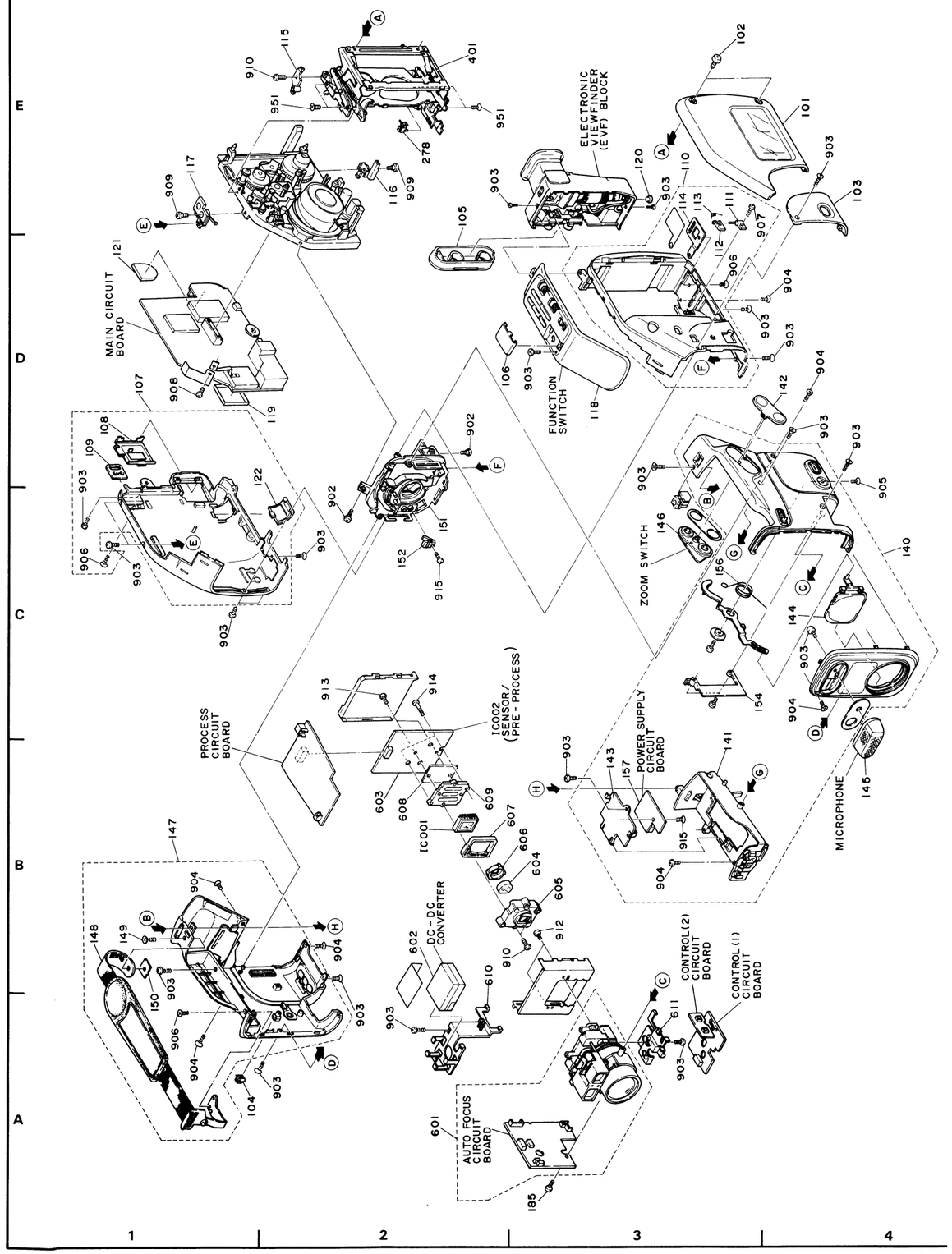


SWITCHING REGULATOR SCHEMATIC (REFERENCE)
SCHALTUNGSREGLER-SCHALTPLAN (REFERENZ)



CHAPTER 6 EXPLODED VIEWS
CABINET SECTION

KAPITEL 6 EXPLOSIONSZEICHNUNGEN
GEHÄUSEABSCHNITT



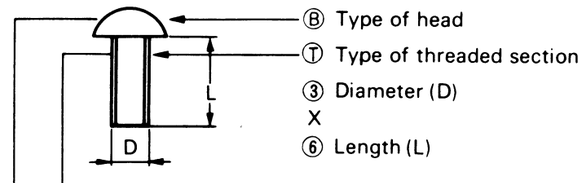
USED SCREW (CABINET SECTION)

SYNBOL No.	CONFIGURATION (COLOUR)	DIMENSION
102	(BLOCK)	Special Screw
185	(BLOCK)	Special Screw
902		Special Screw
903	(BLOCK)	PT 2x5
904	(BLOCK)	F 2x4
905	(BLOCK)	FT 2x6
906	(BLOCK)	F 2x4
907	(BLOCK)	PT 1.7x3

SYNBOL No.	CONFIGURATION (COLOUR)	DIMENSION
908		P 2x4
909		Special Screw
910	(BLOCK)	P 2x7
912		PT 2x4
913		P 2x5
914		P 2x14
915		PT 2x6

SCREW CLASSIFICATION

Example: BT3 × 6



Abbreviation	Name	Shape
No symbol	Brazier head	
P	Pan head	
B	Binding head	
O	Oval countersunk head	
F	Flat countersunk head	

Abbreviation	Name	Shape
No symbol	Machine (clamps without tapping)	
t	Tapping (clamps with tapping) Type 1	
T	Tapping (clamps with tapping) Type 2	
f	Forming tight (for metal)	
Note	Since the forming tight screw tightens while self-tapping. machine screws can be replaced by tapping screws.	

Washers and Nuts

Abbreviation	Name	Shape
W SW LW	Washer Spring washer Locking washer	
E	E-ring	
N	Nut	
Note	Internal dia is indicated for nuts and washers.	

LUBRICATION

Lubrication points are shown in the exploded view diagrams by marks (Ⓢ, Ⓗ, Ⓕ). Lubrications shown in the diagram are as follows.

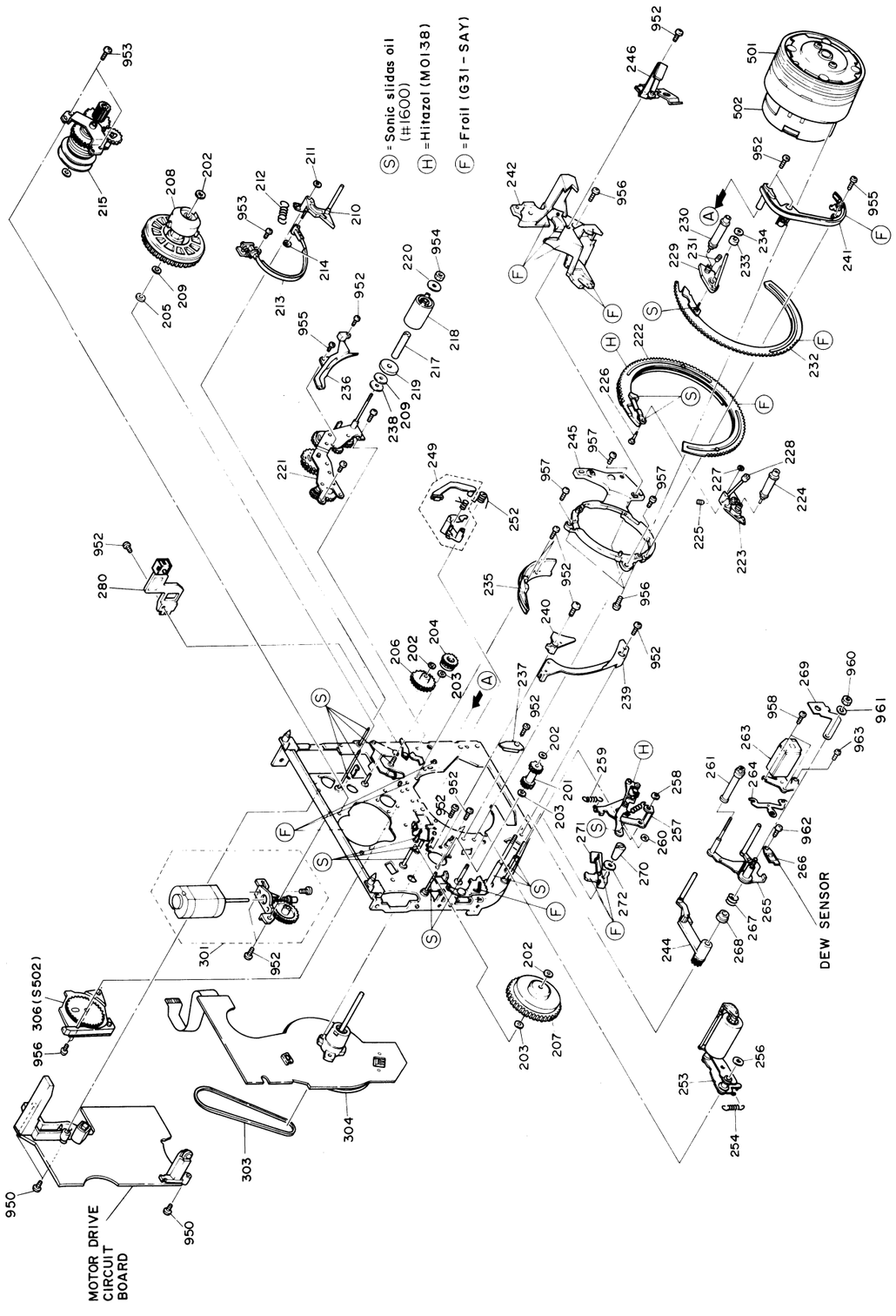
Ⓢ : Sonic slidas oil (#1600)
Ⓗ : Hitazol (MO-138)
Ⓕ : Froil (G31-SAY)

SCHMIERUNG

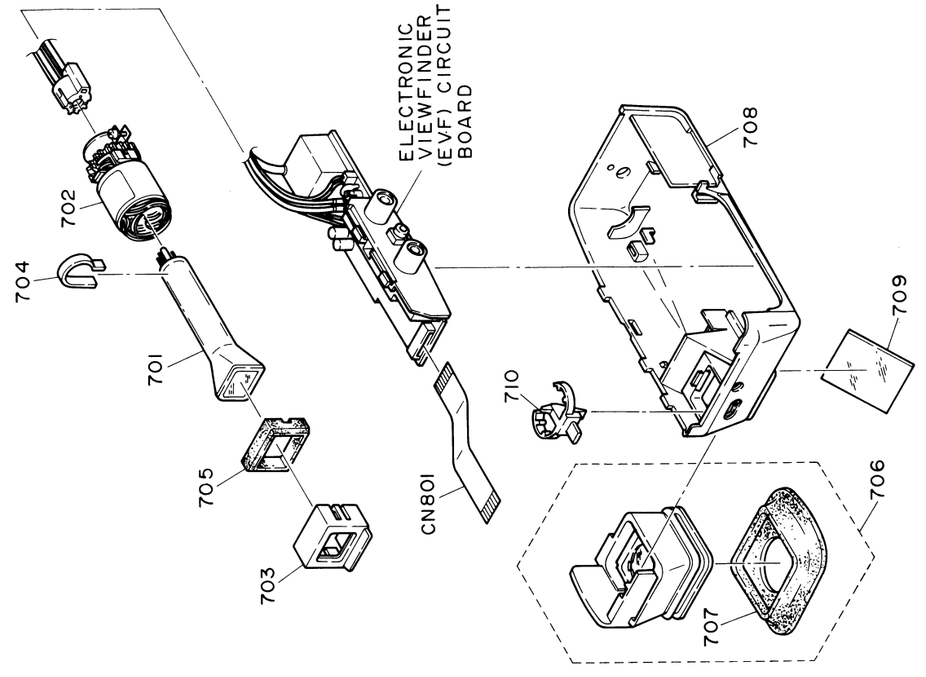
Die Schmierpunkte sind in den Explosionszeichnungen durch die Markierungen (Ⓢ, Ⓗ, Ⓕ) angegeben. Die folgenden Schmiermittel sind in den Diagrammen angegeben.

Ⓢ : Sonic slidas oil (#1600)
Ⓗ : Hitazol (MO-138)
Ⓕ : Froil (G31-SAY)

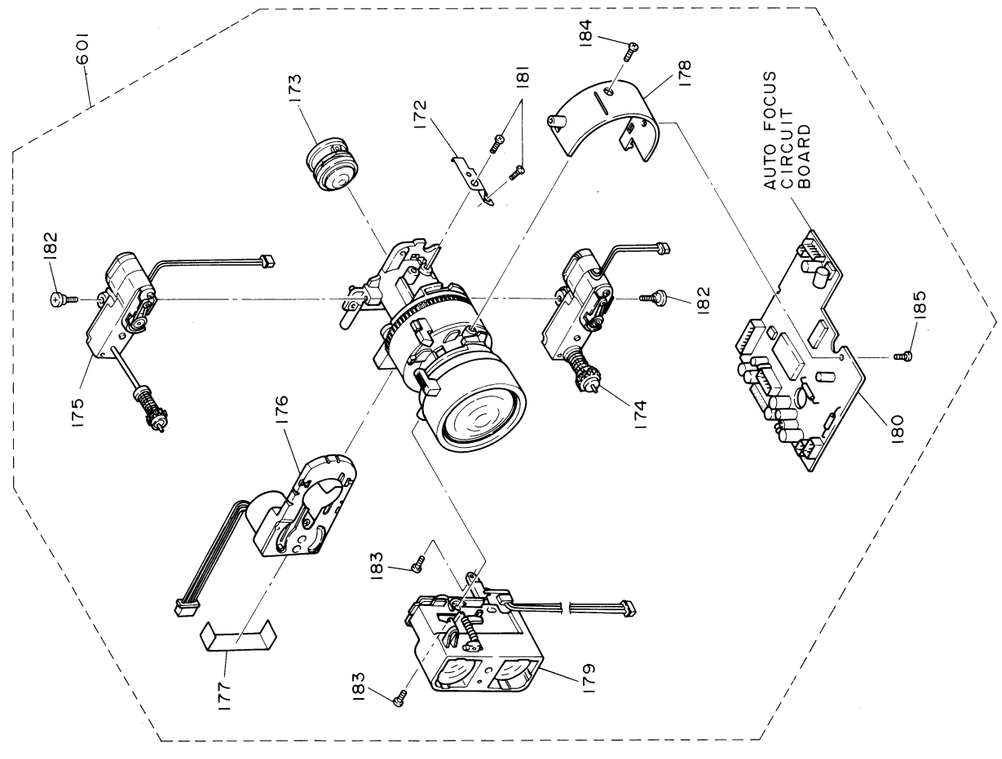
CHASSIS SECTION CHASSISABSCHNITT



ELECTRONIC VIEWFINDER (EVF) SECTION ELEKTRONISCHER SUCHER (EVF)



LENS SECTION OBJEKTIVABSCHNITT



CHAPTER 7 REPLACEMENT PARTS LIST KAPITEL 7 ERSATZTEILLISTE

SYMBOL-No	P-No	DESCRIPTION
MECHANISM SECTION		
		FOR FINAL ASSEMBLY
101	6486912	LID
102	7775341	SCREW
103	6486962	CAP
104	6593022	CAP
105	4710781	COVER,JACK
106	6487321	COVER
107	4710412	CASE(R)
108	6486901	CAP
109	4892461	BRACKET
110	4710453	CASE(L)
111	6195132	HOLDER
112	6195123	GUIDE
113	6551992	SPRING
114	4892451	BRACKET
115	6810271	PIECE
116	6810281	PIECE
117	6810351	PIECE
118	5601812	SWITCH
119	7499211	COVER,SHIELD
120	6594051	CAP
121	6810251	HOLDER
122	6486941	COVER(R)
140	4710732	CASE
141	4710491	CASE BATTERY
142	4740941	BUTTON
143	4892481	ARM
144	6486973	DOOR,LENS
145	5420821	MICROPHONE
146	5601801	SWITCH
147	4710622	CASE
148	7743601	HANDLE
149	8724106	SCREW(2X6)
150	7418781	NUT
151	6810503	JOINT
152	5601761	SWITCH
154	6810382	ARM
156	6552733	SPRING
157	4130754	PWB ASSY POWER SUPPLY
172	6960522	PLATE
173	6960523	SET
174	6960524	MOTOR
175	6960525	MOTOR
176	6960526	IRIS
177	6960527	TAPE,IRIS
178	6960528	COVER
179	6960529	BLOCK,AF
180	1616601	PWB ASSY AUTO FOCUS
181	6960531	SCREW
182	6960532	SCREW
183	6960533	SCREW
184	6960534	SCREW
185	6960535	SCREW
201	6436391	GEAR,REEL
202	7789312	WASHER
203	7789315	WASHER
204	6347553	GEAR
206	6347562	GEAR
207	6405026	GEAR
208	6415653	REEL BASE
209	7789316	WASHER
210	6805294	ARM
211	7784684	WASHER
212	6555644	SPRING
213	7794252	BAND
214	7784684	WASHER
215	6402024	GEAR
217	7562422	SHAFT
218	6424591	ROLLER,IMP
219	7583504	FLANGE
220	7789318	WASHER
221	6405008	GEAR
222	6911487	CAM
223	6911528	BASE,GUIDE(O)
224	6424581	ROLLER,GUIDE
225	7781173	SCREW,SPECIAL
226	7583951	PIN,CONNECTION
227	7788593	WASHER
228	6803472	CAP
229	6911426	BASE
230	6424582	ROLLER,GUIDE
231	7781173	SCREW,SPECIAL
232	7448295	RING
233	6805191	RING
234	7787731	WASHER
235	6805503	BRACKET,RING(L)
236	6805514	GUIDE
237	6805211	BRACKET
238	7799118	WASHER
239	6805604	HOLDER
240	6805206	BRACKET
241	6805526	RAIL
242	6915903	CATCHER
244	6911386	ARM
245	6638631	BASE
246	5793622	BRUSH
249	6805474	ARM,BRAKE
252	6552101	SPRING
253	7448086	ARM
256	7778858	POLYSLIDER WASHER
257	7448185	ARM
258	7799098	WASHER
259	6555716	SPRING
260	7789311	WASHER
261	7584493	GUIDE,TENSION
263	5443481	HEAD
264	6527052	SPRING
265	7448208	ARM
266	0173034	DEW SENSOR
267	6551782	SPRING
268	4524521	COLLAR
269	6527234	BRACKET
270	7562712	SPECIAL SCREW
271	4891772	ARM
272	7789314	WASHER
278	5634831	SWITCH
280	5497182	PWB ASSY END SENSOR
301	7794277	MOTOR,LOADING
303	6351561	BELT
304	5571841	MOTOR,CAPSTAN
306	5601492	SWITCH
401	4892321	STAGE
501	5436196	CYLINDER,UPPER
502	5436203	CYLINDER,LOWER
601	6960241	LENS,ZOOM
602	5274161	COIL
603	1379201	PWB ASSY HTS9511

SYMBOL-No	P-No	DESCRIPTION
604	5783191	FILTER
605	6810541	CAP
606	6594061	RUBBER
607	6810171	HOLDER,SENSOR
608	4340661	SHEET
609	4892341	PLATE,SENSOR
610	6810522	HOLDER
611	6810471	HOLDER
613	7499012	CAP,SHIELD
614	7498851	FRAME,SHIELD
701	5319021	PICTURE TUBE
⚠ 702	5242092	COIL
703	6486991	COVER
704	6407831	HOLDER
705	6594041	RUBBER
706	6486951	LENS
707	6594031	CAP
708	4710503	CASE,EVF
709	7797011	MIRROR
710	4741451	BUTTON
902	7784772	SCREW
903	7775945	SCREW(2X5)
904	7775984	SCREW(2X4)
905	7775948	SCREW(2X8)
906	8724104	SCREW
907	8619063	SCREW(1.7X3)
908	8741104	SCREW (2X4)
909	8650103	SCREW (2X3)
910	7775967	SCREW(2X7)
912	7775944	SCREW(2X4)
913	7775881	SCREW(2X5)
914	8612114	SCREW (2X14)
915	7773406	SCREW(2X6)
950	7783127	SCREW (1.7X6)
951	7785842	SCREW
952	7783124	SCREW (1.7X3)
953	7783124	SCREW (1.7X3)
954	7785621	NUT
955	8724003	SCREW
956	7783125	SCREW (1.7X4)
957	7783126	SCREW
958	8712024	PAN HEAD SCREW-1.4MMDX3MM
961	7799099	WASHER
962	8719966	SCREW(1.4X2.5)
963	7783122	SCREW (1.7X2)

FOR ACCESSARIES

	4130962	ADAPTOR,AC
	5860581	CORD
	5852501	CORD,DC
	5852501	CORD,DC
	4131011	STRAP
	6810951	SCREW

VTR SECTION

CAPACITORS

C 101	0202098	CERAMIC CHIP 0.1UF+80-20% 16V
C 102	0209993	CERAMIC CHIP 0.1UF+-10% 25V
C 103	0202114	CERAMIC CHIP 2200PF+-10% 50V
C 104	0202043	CERAMIC DISC 15PF+-5% 50V
C 105	0202098	CERAMIC CHIP 0.1UF+80-20% 16V
C 106	0209993	CERAMIC CHIP 0.1UF+-10% 25V
C 107	0202114	CERAMIC CHIP 2200PF+-10% 50V
C 108	0202043	CERAMIC DISC 15PF+-5% 50V
C 109	0202098	CERAMIC CHIP 0.1UF+80-20% 16V
C 110	0209993	CERAMIC CHIP 0.1UF+-10% 25V
C 111	0202114	CERAMIC CHIP 2200PF+-10% 50V
C 112	0202043	CERAMIC DISC 15PF+-5% 50V
C 113	0202098	CERAMIC CHIP 0.1UF+80-20% 16V
C 114	0209993	CERAMIC CHIP 0.1UF+-10% 25V
C 115	0202114	CERAMIC CHIP 2200PF+-10% 50V
C 116	0202043	CERAMIC DISC 15PF+-5% 50V
C 117	0209995	CERAMIC CHIP 1.0UF+80-20% 16V
C 118	0209995	CERAMIC CHIP 1.0UF+80-20% 16V
C 119	0209995	CERAMIC CHIP 1.0UF+80-20% 16V
C 120	0209867	CERAMIC CHIP 0.022UF+-10% 25V
C 121	0209995	CERAMIC CHIP 1.0UF+80-20% 16V
C 122	0209995	CERAMIC CHIP 1.0UF+80-20% 16V
C 123	0209867	CERAMIC CHIP 0.022UF+-10% 25V
C 124	0202129	CERAMIC CHIP 0.022UF+80-20% 25V
C 125	0202129	CERAMIC CHIP 0.022UF+80-20% 25V
C 126	0202095	CERAMIC CHIP 0.03UF+80-20% 16V
C 128	0202095	CERAMIC CHIP 0.03UF+80-20% 16V
C 131	0202129	CERAMIC CHIP 0.022UF+80-20% 25V
C 132	0201094	CERAMIC CHIP 47PF+-5% 50V
C 133	0202089	CERAMIC CHIP 33PF+-5% 50V
C 134	0202091	CERAMIC CHIP 39PF+-5% 50V
C 135	0202095	CERAMIC CHIP 0.03UF+80-20% 16V
C 201	0202098	CERAMIC CHIP 0.1UF+80-20% 16V
C 202	0202098	CERAMIC CHIP 0.1UF+80-20% 16V
C 203	0202098	CERAMIC CHIP 0.1UF+80-20% 16V
C 204	0202098	CERAMIC CHIP 0.1UF+80-20% 16V
C 207	0202059	CERAMIC CHIP 270PF+-5% 50V
C 208	0202052	CERAMIC DISC 68PF+-5% 50V
C 209	0202056	CERAMIC CHIP 150PF+-5% 50V
C 210	0202045	CERAMIC DISC 22PF+-5% 50V
C 214	0202127	CERAMIC CHIP 0.01UF+80-20% 50V
C 215	0202127	CERAMIC CHIP 0.01UF+80-20% 50V
C 217	0202129	CERAMIC CHIP 0.022UF+80-20% 25V
C 223	0202048	CERAMIC DISC 39PF+-5% 50V
C 224	0202042	CERAMIC CHIP 12PF+-5% 50V
C 225	0202057	CERAMIC CHIP 180PF+-5% 50V
C 226	0202043	CERAMIC DISC 15PF+-5% 50V
C 231	0202045	CERAMIC DISC 22PF+-5% 50V
C 232	0202053	CERAMIC DISC 82PF+-5% 50V
C 235	0202129	CERAMIC CHIP 0.022UF+80-20% 25V
C 236	0209995	CERAMIC CHIP 1.0UF+80-20% 16V
C 237	0202127	CERAMIC CHIP 0.01UF+80-20% 50V
C 238	0209995	CERAMIC CHIP 1.0UF+80-20% 16V
C 245	0202129	CERAMIC CHIP 0.022UF+80-20% 25V
C 247	0202109	CERAMIC CHIP 1000PF+-10% 50V
C 248	0202127	CERAMIC CHIP 0.01UF+80-20% 50V
C 249	0202127	CERAMIC CHIP 0.01UF+80-20% 50V
C 250	0202085	CERAMIC CHIP 15PF+-5% 50V
C 251	0202127	CERAMIC CHIP 0.01UF+80-20% 50V
C 255	0202052	CERAMIC CHIP 68PF+-5% 50V
C 261	0202049	CERAMIC DISC 47PF+-5% 50V
C 262	0202127	CERAMIC CHIP 0.01UF+80-20% 50V
C 263	0202052	CERAMIC DISC 68PF+-5% 50V
C 264	0202041	CERAMIC CHIP 10PF+-5% 50V
C 267	0202129	CERAMIC CHIP 0.022UF+80-20% 25V
C 268	0202058	CERAMIC CHIP 220PF+-5% 50V
C 269	0202129	CERAMIC CHIP 0.022UF+80-20% 25V
C 270	0202129	CERAMIC CHIP 0.022UF+80-20% 25V
C 271	0202127	CERAMIC CHIP 0.01UF+80-20% 50V
C 272	0202109	CERAMIC CHIP 1000PF+-10% 50V
C 273	0202129	CERAMIC CHIP 0.022UF+80-20% 25V
C 274	0202129	CERAMIC CHIP 0.022UF+80-20% 25V
C 275	0202129	CERAMIC CHIP 0.022UF+80-20% 25V

SYMBOL-No	P-No	DESCRIPTION
C 276	0202129	CERAMIC CHIP 0.022UF+80-20% 25V
C 277	0202116	CERAMIC CHIP 3300PF+-10% 50V
C 278	0202056	CERAMIC CHIP 150PF+-5% 50V
C 279	0202129	CERAMIC CHIP 0.022UF+80-20% 25V
C 280	0202129	CERAMIC CHIP 0.022UF+80-20% 25V
C 281	0202095	CERAMIC CHIP 0.03UF+80-20% 16V
C 283	0202058	CERAMIC CHIP 220PF+-5% 50V
C 284	0202057	CERAMIC CHIP 180PF+-5% 50V
C 287	0202129	CERAMIC CHIP 0.022UF+80-20% 25V
C 289	0209987	CERAMIC CHIP 0.1UF 50V
C 290	0202045	CERAMIC DISC 22PF+-5% 50V
C 291	0202085	CERAMIC CHIP 15PF+-5% 50V
C 292	0209987	CERAMIC CHIP 0.1UF 50V
C 293	0202054	CERAMIC CHIP 100PF+-5% 50V
C 294	0202127	CERAMIC CHIP 0.01UF+80-20% 50V
C 295	0202127	CERAMIC CHIP 0.01UF+80-20% 50V
C 296	0202127	CERAMIC CHIP 0.01UF+80-20% 50V
C 299	0202127	CERAMIC CHIP 0.01UF+80-20% 50V
C 300	0202047	CERAMIC CHIP 33PF+-5% 50V
C 303	0202129	CERAMIC CHIP 0.022UF+80-20% 25V
C 307	0202129	CERAMIC CHIP 0.022UF+80-20% 25V
C 309	0202052	CERAMIC DISC 68PF+-5% 50V
C 310	0202013	CERAMIC DISC 2200PF+-5% 50V
C 311	0202129	CERAMIC CHIP 0.022UF+80-20% 25V
C 331	0202084	CERAMIC CHIP 12PF+-5% 50V
C 332	0202044	CERAMIC CHIP 18PF+-5% 50V
C 333	0202044	CERAMIC CHIP 18PF+-5% 50V
C 412	0202109	CERAMIC CHIP 1000PF+-10% 50V
C 414	0201061	CERAMIC CHIP 0.0047UF+-10% 50V
C 415	0201066	CERAMIC CHIP 0.033UF+-10% 25V
C 416	0202109	CERAMIC CHIP 1000PF+-10% 50V
C 418	0204282	ELECTROLYTIC 0.022UF 63V
C 420	0202058	CERAMIC CHIP 220PF+-5% 50V
C 421	0202109	CERAMIC CHIP 1000PF+-10% 50V
C 422	0202116	CERAMIC CHIP 3300PF+-10% 50V
C 426	0202058	CERAMIC CHIP 220PF+-5% 50V
C 428	0201065	CERAMIC CHIP 0.022UF+-10% 25V
C 429	0209850	CERAMIC DISC 0.015UF+-20% 50V
C 431	0202114	CERAMIC CHIP 2200PF+-10% 50V
C 432	0202118	CERAMIC CHIP 4700PF+-10% 25V
C 435	0209969	CERAMIC CHIP 0.1UF+80-20% 25V
C 436	0209964	CERAMIC CHIP 0.33UF+80-20% 16V
C 437	0202116	CERAMIC CHIP 3300PF+-10% 50V
C 440	0209995	CERAMIC CHIP 1.0UF+80-20% 16V
C 601	0202054	CERAMIC CHIP 100PF+-5% 50V
C 602	0202107	CERAMIC CHIP 680PF+-10% 50V
C 604	0202118	CERAMIC CHIP 4700PF+-10% 25V
C 605	0202118	CERAMIC CHIP 4700PF+-10% 25V
C 607	0202047	CERAMIC CHIP 33PF+-5% 50V
C 608	0202107	CERAMIC CHIP 680PF+-10% 50V
C 609	0202109	CERAMIC CHIP 1000PF+-10% 50V
C 611	0202109	CERAMIC CHIP 1000PF+-10% 50V
C 614	0202109	CERAMIC CHIP 1000PF+-10% 50V
C 615	0209978	CERAMIC CHIP 0.033UF+-10% 25V
C 617	0209978	CERAMIC CHIP 0.033UF+-10% 25V
C 619	0202127	CERAMIC CHIP 0.01UF+80-20% 50V
C 623	0209838	CERAMIC CHIP 0.01UF+-20% 50V
C 624	0202109	CERAMIC CHIP 1000PF+-10% 50V
C 629	0202114	CERAMIC CHIP 2200PF+-10% 50V
C 630	0202109	CERAMIC CHIP 1000PF+-10% 50V
C 631	0202054	CERAMIC CHIP 100PF+-5% 50V
C 632	0202095	CERAMIC CHIP 0.03UF+80-20% 16V
C 639	0202118	CERAMIC CHIP 4700PF+-10% 25V
C 651	0202118	CERAMIC CHIP 4700PF+-10% 25V
C 652	0202118	CERAMIC CHIP 4700PF+-10% 25V

SYMBOL-No	P-No	DESCRIPTION
C 655	0202111	CERAMIC CHIP 1200PF+-10% 50V
C 656	0202111	CERAMIC CHIP 1200PF+-10% 50V
C 657	0202118	CERAMIC CHIP 4700PF+-10% 25V
C 658	0202118	CERAMIC CHIP 4700PF+-10% 25V
C 661	0202114	CERAMIC CHIP 2200PF+-10% 50V
C 662	0202114	CERAMIC CHIP 2200PF+-10% 50V
C 664	0202109	CERAMIC CHIP 1000PF+-10% 50V
C 665	0202054	CERAMIC CHIP 100PF+-5% 50V
C 755	0209838	CERAMIC CHIP 0.01UF+-20% 50V
C 756	0201809	TANTALUM 2.2UF+-20% 6.3V
C 757	0201807	TANTALUM 1UF 16V
C 758	0209995	CERAMIC CHIP 1.0UF+80-20% 16V
C 759	0209865	CERAMIC CHIP 0.033UF+80-20% 25V
C 760	0209865	CERAMIC CHIP 0.033UF+80-20% 25V
C 761	0209969	CERAMIC CHIP 0.1UF+80-20% 25V
C 762	0209969	CERAMIC CHIP 0.1UF+80-20% 25V
C 763	0209995	CERAMIC CHIP 1.0UF+80-20% 16V
C 801	0202095	CERAMIC CHIP 0.03UF+80-20% 16V
C 802	0202095	CERAMIC CHIP 0.03UF+80-20% 16V
C 804	0202085	CERAMIC CHIP 15PF+-5% 50V
C 805	0202088	CERAMIC CHIP 27PF+-5% 50V
C 806	0202096	CERAMIC CHIP 0.047UF+80-20% 16V
C 808	0202109	CERAMIC CHIP 1000PF+-10% 50V
C 811	0202098	CERAMIC CHIP 0.1UF+80-20% 16V
C 812	0202127	CERAMIC CHIP 0.01UF+80-20% 50V
C 813	0202118	CERAMIC CHIP 4700PF+-10% 25V
C 814	0202127	CERAMIC CHIP 0.01UF+80-20% 50V
C 815	0202098	CERAMIC CHIP 0.1UF+80-20% 16V
C 819	0202047	CERAMIC CHIP 33PF+-5% 50V
C 821	0202129	CERAMIC CHIP 0.022UF+80-20% 25V
C 822	0202098	CERAMIC CHIP 0.1UF+80-20% 16V
C 823	0202098	CERAMIC CHIP 0.1UF+80-20% 16V
C 826	0202096	CERAMIC CHIP 0.047UF+80-20% 16V
C 987	0209995	CERAMIC CHIP 1.0UF+80-20% 16V
C 988	0209995	CERAMIC CHIP 1.0UF+80-20% 16V
C 989	0209995	CERAMIC CHIP 1.0UF+80-20% 16V
C 990	0209995	CERAMIC CHIP 1.0UF+80-20% 16V

RESISTORS

R 101	0104031	CHIP RESISTOR 330 OHM+-5% 1/16W
R 102	0104031	CHIP RESISTOR 330 OHM+-5% 1/16W
R 103	0104031	CHIP RESISTOR 330 OHM+-5% 1/16W
R 104	0104031	CHIP RESISTOR 330 OHM+-5% 1/16W
R 105	0104011	CHIP RESISTOR 10 OHM+-5% 1/16W
R 110	0104052	CHIP RESISTOR 12KOHM+-5% 1/16W
R 111	0104044	CHIP RESISTOR 3.3KOHM+-5% 1/16W
R 112	0104044	CHIP RESISTOR 3.3KOHM+-5% 1/16W
R 113	0104044	CHIP RESISTOR 3.3KOHM+-5% 1/16W
R 114	0104044	CHIP RESISTOR 3.3KOHM+-5% 1/16W
R 115	0104041	CHIP RESISTOR 1.8KOHM+-5% 1/16W
R 116	0104041	CHIP RESISTOR 1.8KOHM+-5% 1/16W
R 117	0104041	CHIP RESISTOR 1.8KOHM+-5% 1/16W
R 118	0104041	CHIP RESISTOR 1.8KOHM+-5% 1/16W
R 119	0104057	CHIP RESISTOR 39KOHM+-5% 1/16W
R 120	0104059	CHIP RESISTOR 56KOHM+-5% 1/16W
R 121	0104083	CHIP RESISTOR 33KOHM+-5% 1/16W
R 122	0104034	CHIP RESISTOR 560 OHM+-5% 1/16W
R 123	0104031	CHIP RESISTOR 330 OHM+-5% 1/16W
R 124	0103817	CHIP RESISTOR 6.8OHM+-10% 0.1W
R 125	0104051	CHIP RESISTOR 10KOHM+-5% 1/16W
R 126	0104037	CHIP RESISTOR 1KOHM+-5% 1/16W
R 127	0104037	CHIP RESISTOR 1KOHM+-5% 1/16W
R 201	0104042	CHIP RESISTOR 2.2KOHM+-5% 1/16W
R 202	0104042	CHIP RESISTOR 2.2KOHM+-5% 1/16W
R 203	0104042	CHIP RESISTOR 2.2KOHM+-5% 1/16W

SYMBOL-No	P-No	DESCRIPTION
R 204	0104042	CHIP RESISTOR 2.2KOHM+-5% 1/16W
R 205	0104027	CARBON FILM 180 OHM+-5% 1/16W
R 206	0104037	CHIP RESISTOR 1KOHM+-5% 1/16W
R 207	0104039	CHIP RESISTOR 1.5KOHM+-5% 1/16W
R 208	0104033	CHIP RESISTOR 470 OHM+-5% 1/16W
R 209	0104033	CHIP RESISTOR 470 OHM+-5% 1/16W
R 210	0104033	CHIP RESISTOR 470 OHM+-5% 1/16W
R 211	0104046	CHIP RESISTOR 4.7KOHM+-5% 1/16W
R 213	0104037	CHIP RESISTOR 1KOHM+-5% 1/16W
R 214	0104034	CHIP RESISTOR 560 OHM+-5% 1/16W
R 215	0104037	CHIP RESISTOR 1KOHM+-5% 1/16W
R 216	0104058	CHIP RESISTOR 47KOHM+-5% 1/16W
R 217	0104055	CHIP RESISTOR 22KOHM+-5% 1/16W
R 218	0104032	CHIP RESISTOR 390 OHM+-5% 1/16W
R 219	0104037	CHIP RESISTOR 1KOHM+-5% 1/16W
R 221	0104042	CHIP RESISTOR 2.2KOHM+-5% 1/16W
R 222	0104066	CHIP RESISTOR 180KOHM+-5% 1/16W
R 223	0104072	CHIP RESISTOR 470KOHM+-5% 1/16W
R 224	0104051	CHIP RESISTOR 10KOHM+-5% 1/16W
R 225	0104037	CHIP RESISTOR 1KOHM+-5% 1/16W
R 226	0104037	CHIP RESISTOR 1KOHM+-5% 1/16W
R 227	0104051	CHIP RESISTOR 10KOHM+-5% 1/16W
R 228	0104048	CHIP RESISTOR 6.8KOHM+-5% 1/16W
R 229	0104031	CHIP RESISTOR 330 OHM+-5% 1/16W
R 231	0104083	CHIP RESISTOR 33KOHM+-5% 1/16W
R 232	0104046	CHIP RESISTOR 4.7KOHM+-5% 1/16W
R 233	0104047	CHIP RESISTOR 5.6KOHM+-5% 1/16W
R 235	0104042	CHIP RESISTOR 2.2KOHM+-5% 1/16W
R 236	0104027	CARBON FILM 180 OHM+-5% 1/16W
R 237	0104039	CHIP RESISTOR 1.5KOHM+-5% 1/16W
R 238	0104046	CHIP RESISTOR 4.7KOHM+-5% 1/16W
R 239	0104031	CHIP RESISTOR 330 OHM+-5% 1/16W
R 245	0104051	CHIP RESISTOR 10KOHM+-5% 1/16W
R 246	0104035	CHIP RESISTOR 680 OHM+-5% 1/16W
R 247	0104035	CHIP RESISTOR 680 OHM+-5% 1/16W
R 248	0104038	CHIP RESISTOR 1.2KOHM+-5% 1/16W
R 249	0104038	CHIP RESISTOR 1.2KOHM+-5% 1/16W
R 252	0104023	CHIP RESISTOR 82 OHM+-5% 1/16W
R 269	0104037	CHIP RESISTOR 1KOHM+-5% 1/16W
R 270	0104036	CHIP RESISTOR 820 OHM+-5% 1/16W
R 271	0104038	CHIP RESISTOR 1.2KOHM+-5% 1/16W
R 272	0104037	CHIP RESISTOR 1KOHM+-5% 1/16W
R 275	0104036	CHIP RESISTOR 820 OHM+-5% 1/16W
R 276	0104046	CHIP RESISTOR 4.7KOHM+-5% 1/16W
R 277	0104041	CHIP RESISTOR 1.8KOHM+-5% 1/16W
R 278	0104055	CHIP RESISTOR 22KOHM+-5% 1/16W
R 279	0104036	CHIP RESISTOR 820 OHM+-5% 1/16W
R 280	0104036	CHIP RESISTOR 820 OHM+-5% 1/16W
R 281	0104037	CHIP RESISTOR 1KOHM+-5% 1/16W
R 282	0104037	CHIP RESISTOR 1KOHM+-5% 1/16W
R 283	0104029	CHIP RESISTOR 270 OHM+-5% 1/16W
R 284	0104038	CHIP RESISTOR 1.2KOHM+-5% 1/16W
R 285	0104051	CHIP RESISTOR 10KOHM+-5% 1/16W
R 286	0104051	CHIP RESISTOR 10KOHM+-5% 1/16W
R 287	0104052	CHIP RESISTOR 12KOHM+-5% 1/16W
R 288	0104051	CHIP RESISTOR 10KOHM+-5% 1/16W
R 289	0104051	CHIP RESISTOR 10KOHM+-5% 1/16W
R 291	0104042	CHIP RESISTOR 2.2KOHM+-5% 1/16W
R 295	0104039	CHIP RESISTOR 1.5KOHM+-5% 1/16W
R 296	0104038	CHIP RESISTOR 1.2KOHM+-5% 1/16W
R 297	0104061	CHIP RESISTOR 68KOHM+-5% 1/16W
R 298	0104051	CHIP RESISTOR 10KOHM+-5% 1/16W
R 299	0104076	CHIP RESISTOR 1000KOHM+-5% 1/16W
R 301	0103827	CHIP RESISTOR 47 OHM+-5% 0.1W
R 302	0104073	CHIP RESISTOR 560KOHM+-5% 1/16W
R 303	0104065	CHIP RESISTOR 150KOHM+-5% 1/16W
R 304	0103893	CHIP RESISTOR 75 OHM+-5% 1/8W
R 305	0104042	CHIP RESISTOR 2.2KOHM+-5% 1/16W
R 306	0104051	CHIP RESISTOR 10KOHM+-5% 1/16W
R 307	0104037	CHIP RESISTOR 1KOHM+-5% 1/16W
R 310	0104059	CHIP RESISTOR 56KOHM+-5% 1/16W
R 402	0104011	CHIP RESISTOR 10 OHM+-5% 1/16W
R 403	0104072	CHIP RESISTOR 470KOHM+-5% 1/16W
R 405	0104044	CHIP RESISTOR 3.3KOHM+-5% 1/16W
R 406	0104033	CHIP RESISTOR 470 OHM+-5% 1/16W
R 407	0104054	CHIP RESISTOR 18KOHM+-5% 1/16W
R 408	0104035	CHIP RESISTOR 680 OHM+-5% 1/16W
R 409	0104073	CHIP RESISTOR 560KOHM+-5% 1/16W
R 410	0104073	CHIP RESISTOR 560KOHM+-5% 1/16W
R 414	0104037	CHIP RESISTOR 1KOHM+-5% 1/16W
R 415	0104051	CHIP RESISTOR 10KOHM+-5% 1/16W
R 416	0104056	CHIP RESISTOR 27KOHM+-5% 1/16W
R 417	0104067	CHIP RESISTOR 220KOHM+-5% 1/16W
R 419	0104037	CHIP RESISTOR 1KOHM+-5% 1/16W
R 420	0104044	CHIP RESISTOR 3.3KOHM+-5% 1/16W
R 421	0104047	CHIP RESISTOR 5.6KOHM+-5% 1/16W
R 423	0104048	CHIP RESISTOR 6.8KOHM+-5% 1/16W
R 424	0104067	CHIP RESISTOR 220KOHM+-5% 1/16W
R 425	0104046	CHIP RESISTOR 4.7KOHM+-5% 1/16W
R 426	0104076	CHIP RESISTOR 1000KOHM+-5% 1/16W
R 427	0104051	CHIP RESISTOR 10KOHM+-5% 1/16W
R 428	0104028	CHIP RESISTOR 220 OHM+-5% 1/16W
R 429	0104063	CHIP RESISTOR 100KOHM+-5% 1/16W
R 430	0104055	CHIP RESISTOR 22KOHM+-5% 1/16W
R 432	0104046	CHIP RESISTOR 4.7KOHM+-5% 1/16W
R 433	0104037	CHIP RESISTOR 1KOHM+-5% 1/16W
R 438	0104046	CHIP RESISTOR 4.7KOHM+-5% 1/16W
R 443	0104046	CHIP RESISTOR 4.7KOHM+-5% 1/16W
R 447	0104063	CHIP RESISTOR 100KOHM+-5% 1/16W
R 449	0104046	CHIP RESISTOR 4.7KOHM+-5% 1/16W
R 450	0104029	CHIP RESISTOR 270 OHM+-5% 1/16W
R 455	0104046	CHIP RESISTOR 4.7KOHM+-5% 1/16W
R 601	0104034	CHIP RESISTOR 560 OHM+-5% 1/16W
R 602	0104051	CHIP RESISTOR 10KOHM+-5% 1/16W
R 603	0104071	CHIP RESISTOR 390KOHM+-5% 1/16W
R 604	0104064	CHIP RESISTOR 120KOHM+-5% 1/16W
R 605	0104072	CHIP RESISTOR 470KOHM+-5% 1/16W
R 606	0104067	CHIP RESISTOR 220KOHM+-5% 1/16W
R 607	0104063	CHIP RESISTOR 100KOHM+-5% 1/16W
R 608	0104034	CHIP RESISTOR 560 OHM+-5% 1/16W
R 609	0104063	CHIP RESISTOR 100KOHM+-5% 1/16W
R 610	0104072	CHIP RESISTOR 470KOHM+-5% 1/16W
R 611	0104066	CHIP RESISTOR 180KOHM+-5% 1/16W
R 612	0104064	CHIP RESISTOR 120KOHM+-5% 1/16W
R 613	0104037	CHIP RESISTOR 1KOHM+-5% 1/16W
R 614	0104046	CHIP RESISTOR 4.7KOHM+-5% 1/16W
R 615	0104046	CHIP RESISTOR 4.7KOHM+-5% 1/16W
R 616	0104051	CHIP RESISTOR 10KOHM+-5% 1/16W
R 617	0104066	CHIP RESISTOR 180KOHM+-5% 1/16W
R 618	0104053	CHIP RESISTOR 15KOHM+-5% 1/16W
R 619	0104052	CHIP RESISTOR 12KOHM+-5% 1/16W
R 620	0104059	CHIP RESISTOR 56KOHM+-5% 1/16W
R 621	0104066	CHIP RESISTOR 180KOHM+-5% 1/16W
R 623	0104049	CHIP RESISTOR 8.2KOHM+-5% 1/16W
R 624	0104055	CHIP RESISTOR 22KOHM+-5% 1/16W
R 625	0104051	CHIP RESISTOR 10KOHM+-5% 1/16W
R 626	0104065	CHIP RESISTOR 150KOHM+-5% 1/16W
R 627	0104038	CHIP RESISTOR 1.2KOHM+-5% 1/16W
R 628	0104074	CHIP RESISTOR 680KOHM+-5% 1/16W
R 629	0104067	CHIP RESISTOR 220KOHM+-5% 1/16W

SYMBOL-No	P-No	DESCRIPTION
R 630	0104049	CHIP RESISTOR 8.2KOHM+-5% 1/16W
R 631	0104063	CHIP RESISTOR 100KOHM+-5% 1/16W
R 632	0104063	CHIP RESISTOR 100KOHM+-5% 1/16W
R 633	0104045	CHIP RESISTOR 3.9KOHM+-5% 1/16W
R 634	0104051	CHIP RESISTOR 10KOHM+-5% 1/16W
R 635	0104063	CHIP RESISTOR 100KOHM+-5% 1/16W
R 636	0104063	CHIP RESISTOR 100KOHM+-5% 1/16W
R 637	0104064	CHIP RESISTOR 120KOHM+-5% 1/16W
R 640	0104041	CHIP RESISTOR 1.8KOHM+-5% 1/16W
R 641	0104058	CHIP RESISTOR 47KOHM+-5% 1/16W
R 642	0104058	CHIP RESISTOR 47KOHM+-5% 1/16W
R 643	0104077	CHIP RESISTOR 1.5MOHM+-5% 1/16W
R 644	0104037	CHIP RESISTOR 1KOHM+-5% 1/16W
R 645	0104072	CHIP RESISTOR 470KOHM+-5% 1/16W
R 646	0104072	CHIP RESISTOR 470KOHM+-5% 1/16W
R 649	0104064	CHIP RESISTOR 120KOHM+-5% 1/16W
R 650	0104057	CHIP RESISTOR 39KOHM+-5% 1/16W
R 651	0104058	CHIP RESISTOR 47KOHM+-5% 1/16W
R 664	0104058	CHIP RESISTOR 47KOHM+-5% 1/16W
R 668	0104063	CHIP RESISTOR 100KOHM+-5% 1/16W
R 670	0104063	CHIP RESISTOR 100KOHM+-5% 1/16W
R 671	0104066	CHIP RESISTOR 180KOHM+-5% 1/16W
R 672	0104071	CHIP RESISTOR 390KOHM+-5% 1/16W
R 673	0104059	CHIP RESISTOR 56KOHM+-5% 1/16W
R 674	0104052	CHIP RESISTOR 12KOHM+-5% 1/16W
R 675	0104046	CHIP RESISTOR 4.7KOHM+-5% 1/16W
R 676	0104052	CHIP RESISTOR 12KOHM+-5% 1/16W
R 677	0104058	CHIP RESISTOR 47KOHM+-5% 1/16W
R 678	0104063	CHIP RESISTOR 100KOHM+-5% 1/16W
R 679	0104065	CHIP RESISTOR 150KOHM+-5% 1/16W
R 680	0104072	CHIP RESISTOR 470KOHM+-5% 1/16W
R 681	0104062	CHIP RESISTOR 82KOHM+-5% 1/16W
R 682	0104052	CHIP RESISTOR 12KOHM+-5% 1/16W
R 683	0104046	CHIP RESISTOR 4.7KOHM+-5% 1/16W
R 684	0104052	CHIP RESISTOR 12KOHM+-5% 1/16W
R 685	0104063	CHIP RESISTOR 100KOHM+-5% 1/16W
R 686	0104071	CHIP RESISTOR 390KOHM+-5% 1/16W
R 687	0104055	CHIP RESISTOR 22KOHM+-5% 1/16W
R 688	0104071	CHIP RESISTOR 390KOHM+-5% 1/16W
R 689	0104058	CHIP RESISTOR 47KOHM+-5% 1/16W
R 690	0104067	CHIP RESISTOR 220KOHM+-5% 1/16W
R 693	0104076	CHIP RESISTOR 1000KOHM+-5% 1/16W
R 694	0104076	CHIP RESISTOR 1000KOHM+-5% 1/16W
R 697	0104076	CHIP RESISTOR 1000KOHM+-5% 1/16W
R 698	0104076	CHIP RESISTOR 1000KOHM+-5% 1/16W
R 699	0104065	CHIP RESISTOR 150KOHM+-5% 1/16W
R 701	0103867	CHIP RESISTOR 100KOHM+-5% 0.1W
R 702	0103867	CHIP RESISTOR 100KOHM+-5% 0.1W
R 703	0103867	CHIP RESISTOR 100KOHM+-5% 0.1W
R 751	0103819	CHIP RESISTOR 10 OHM+-5% 0.1W
R 752	0103819	CHIP RESISTOR 10 OHM+-5% 0.1W
R 753	0103819	CHIP RESISTOR 10 OHM+-5% 0.1W
R 754	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R 755	0103842	CHIP RESISTOR 820 OHM+-5% 0.1W
R 756	0103838	CHIP RESISTOR 390 OHM+-5% 0.1W
R 763	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R 764	0103851	CHIP RESISTOR 4.7KOHM+-5% 0.1W
R 765	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R 766	0103852	CHIP RESISTOR 5.6KOHM+-5% 0.1W
R 767	0103831	CHIP RESISTOR 100 OHM+-5% 0.1W
R 768	0103873	CHIP RESISTOR 330KOHM+-5% 0.1W
R 769	0103832	CHIP RESISTOR 120OHM+-5% 0.1W
R 771	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R 772	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R 773	0103870	CHIP RESISTOR 180KOHM+-5% 0.1W

SYMBOL-No	P-No	DESCRIPTION
R 774	0103870	CHIP RESISTOR 180KOHM+-5% 0.1W
R 775	0103847	CHIP RESISTOR 2.2KOHM+-5% 0.1W
R 776	0103860	CHIP RESISTOR 27KOHM+-5% 0.1W
R 777	0103867	CHIP RESISTOR 100KOHM+-5% 0.1W
R 778	0103840	CHIP RESISTOR 560 OHM+-5% 0.1W
R 780	0103851	CHIP RESISTOR 4.7KOHM+-5% 0.1W
R 782	0103867	CHIP RESISTOR 100KOHM+-5% 0.1W
R 783	0103859	CHIP RESISTOR 22KOHM+-5% 0.1W
R 784	0103866	CHIP RESISTOR 82KOHM+-5% 0.1W
R 785	0103863	CHIP RESISTOR 47KOHM+-5% 0.1W
R 786	0103863	CHIP RESISTOR 47KOHM+-5% 0.1W
R 787	0103863	CHIP RESISTOR 47KOHM+-5% 0.1W
R 788	0103862	CHIP RESISTOR 39KOHM+-5% 0.1W
R 789	0103862	CHIP RESISTOR 39KOHM+-5% 0.1W
R 790	0103876	CHIP RESISTOR 560KOHM+-5% 0.1W
R 791	0103863	CHIP RESISTOR 47KOHM+-5% 0.1W
R 792	0103863	CHIP RESISTOR 47KOHM+-5% 0.1W
R 793	0103833	CHIP RESISTOR 150 OHM+-5% 0.1W
R 794	0103837	CHIP RESISTOR 330 OHM+-5% 0.1W
R 795	0103879	CHIP RESISTOR 1MOHM+-5% 0.1W
R 796	0103868	CHIP RESISTOR 120KOHM+-5% 0.1W
R 797	0103867	CHIP RESISTOR 100KOHM+-5% 0.1W
R 798	0103851	CHIP RESISTOR 4.7KOHM+-5% 0.1W
R 799	0103867	CHIP RESISTOR 100KOHM+-5% 0.1W
R 801	0104063	CHIP RESISTOR 100KOHM+-5% 1/16W
R 802	0104063	CHIP RESISTOR 100KOHM+-5% 1/16W
R 803	0104063	CHIP RESISTOR 100KOHM+-5% 1/16W
R 804	0104063	CHIP RESISTOR 100KOHM+-5% 1/16W
R 806	0104051	CHIP RESISTOR 10KOHM+-5% 1/16W
R 807	0104046	CHIP RESISTOR 4.7KOHM+-5% 1/16W
R 808	0104046	CHIP RESISTOR 4.7KOHM+-5% 1/16W
R 809	0104037	CHIP RESISTOR 1KOHM+-5% 1/16W
R 810	0104043	CHIP RESISTOR 2.7KOHM+-5% 1/16W
R 811	0104058	CHIP RESISTOR 47KOHM+-5% 1/16W
R 812	0104043	CHIP RESISTOR 2.7KOHM+-5% 1/16W
R 813	0104051	CHIP RESISTOR 10KOHM+-5% 1/16W
R 816	0104076	CHIP RESISTOR 1000KOHM+-5% 1/16W
R 817	0104076	CHIP RESISTOR 1000KOHM+-5% 1/16W
R 818	0104076	CHIP RESISTOR 1000KOHM+-5% 1/16W
R 819	0104076	CHIP RESISTOR 1000KOHM+-5% 1/16W
R 821	0104051	CHIP RESISTOR 10KOHM+-5% 1/16W
R 822	0104051	CHIP RESISTOR 10KOHM+-5% 1/16W
R 823	0104051	CHIP RESISTOR 10KOHM+-5% 1/16W
R 824	0104051	CHIP RESISTOR 10KOHM+-5% 1/16W
R 825	0104063	CHIP RESISTOR 100KOHM+-5% 1/16W
R 826	0104111	METAL FILM 10KOHM+-10% 1/10W
R 827	0104111	METAL FILM 10KOHM+-10% 1/10W
R 828	0104111	METAL FILM 10KOHM+-10% 1/10W
R 829	0104111	METAL FILM 10KOHM+-10% 1/10W
R 830	0104076	CHIP RESISTOR 1000KOHM+-5% 1/16W
R 831	0104051	CHIP RESISTOR 10KOHM+-5% 1/16W
R 832	0104051	CHIP RESISTOR 10KOHM+-5% 1/16W
R 833	0104051	CHIP RESISTOR 10KOHM+-5% 1/16W
R 834	0104051	CHIP RESISTOR 10KOHM+-5% 1/16W
R 835	0104051	CHIP RESISTOR 10KOHM+-5% 1/16W
R 837	0104063	CHIP RESISTOR 100KOHM+-5% 1/16W
R 838	0104051	CHIP RESISTOR 10KOHM+-5% 1/16W
R 839	0104077	CHIP RESISTOR 1.5MOHM+-5% 1/16W
R 840	0104077	CHIP RESISTOR 1.5MOHM+-5% 1/16W
R 841	0104076	CHIP RESISTOR 1000KOHM+-5% 1/16W
R 842	0104031	CHIP RESISTOR 330 OHM+-5% 1/16W
R 843	0104051	CHIP RESISTOR 10KOHM+-5% 1/16W
R 845	0104111	METAL FILM 10KOHM+-10% 1/10W
R 846	0104051	CHIP RESISTOR 10KOHM+-5% 1/16W
R 850	0104041	CHIP RESISTOR 1.8KOHM+-5% 1/16W

SYMBOL-No	P-No	DESCRIPTION
R 851	0104032	CHIP RESISTOR 390 OHM+-5% 1/16W
R 852	0104048	CHIP RESISTOR 6.8KOHM+-5% 1/16W
R 853	0104042	CHIP RESISTOR 2.2KOHM+-5% 1/16W
R 854	0104076	CHIP RESISTOR 1000KOHM+-5% 1/16W
R 855	0104051	CHIP RESISTOR 10KOHM+-5% 1/16W
R 858	0104063	CHIP RESISTOR 100KOHM+-5% 1/16W
R 859	0104051	CHIP RESISTOR 10KOHM+-5% 1/16W
R 860	0104078	
R 861	0104037	CHIP RESISTOR 1KOHM+-5% 1/16W
R 862	0104037	CHIP RESISTOR 1KOHM+-5% 1/16W
R 863	0104037	CHIP RESISTOR 1KOHM+-5% 1/16W
R 864	0104071	CHIP RESISTOR 390KOHM+-5% 1/16W
R 865	0104051	CHIP RESISTOR 10KOHM+-5% 1/16W
R 866	0104042	CHIP RESISTOR 2.2KOHM+-5% 1/16W
R 867	0104042	CHIP RESISTOR 2.2KOHM+-5% 1/16W
R 868	0104042	CHIP RESISTOR 2.2KOHM+-5% 1/16W
R 869	0104076	CHIP RESISTOR 1000KOHM+-5% 1/16W
R 889	0104067	CHIP RESISTOR 220KOHM+-5% 1/16W
R 890	0104076	CHIP RESISTOR 1000KOHM+-5% 1/16W
R 899	0104037	CHIP RESISTOR 1KOHM+-5% 1/16W
R 981	0104044	CHIP RESISTOR 3.3KOHM+-5% 1/16W
R 982	0104053	CHIP RESISTOR 15KOHM+-5% 1/16W
RT 201	5040044	SEMI VARIABLE 1KOHM
RT 202	5040045	SEMI VARIABLE 2.2KOHM
RT 271	5040045	SEMI VARIABLE 2.2KOHM
RT 401	5040049	SEMI VARIABLE 47KOHM
RT 601	5040053	SEMI VARIABLE 470KOHM
RT 602	5040052	SEMI VARIABLE 220KOHM
RV 601	5002241	VARIABLE 500KOHM
		SEMI-CONDUCTORS
D 201	5337131	DIODE MA141WKT
D 202	5337131	DIODE MA141WKT
D 601	5337133	DIODE MA141K
D 602	5337133	DIODE MA141K
D 605	5337134	DIODE MA143
D 606	5337134	DIODE MA143
D 607	5337134	DIODE MA143
D 608	5337134	DIODE MA143
D 751	5328951	DIODE DAN202K
D 752	5328951	DIODE DAN202K
D 802	5337132	DIODE MA141WAT
D 803	5337133	DIODE MA141K
D 804	5337133	DIODE MA141K
D 805	5337133	DIODE MA141K
D 806	5337133	DIODE MA141K
D 809	5337133	DIODE MA141K
D 899	5337133	DIODE MA141K
D 981	5337133	DIODE MA141K
D 990	5332542	DIODE A81-04F
IC 101	1350181	IC HA118043MA
IC 201	1372351	IC HT7217
IC 203	1351811	IC TL8809F
IC 204	1351071	IC NJM2228M
IC 271	1350451	IC HA118023MP
IC 301	1350801	IC MM1002
IC 401	1350281	IC BA7757BK
IC 601	1350731	IC HD49743
IC 751	5307061	IC BA6454FP
IC 752	5304281	IC TA7291F
IC 753	5352722	IC LM2903M
IC 801	1355298	IC HD404439A11H
IC 802	1351601	IC MM1028BF
IC 803	1351731	IC UPD6451GT-625
IC 804	1351062	IC MC147805.2UTE
IC 805	5307001	IC 052ALRLF

SYMBOL-No	P-No	DESCRIPTION
Q 101	5328721	TRANSISTOR 2SD1328
Q 102	5328721	TRANSISTOR 2SD1328
Q 103	5328721	TRANSISTOR 2SD1328
Q 104	5328721	TRANSISTOR 2SD1328
Q 105	5326201	TRANSISTOR FMG2
Q 106	5326201	TRANSISTOR FMG2
Q 107	5326452	TRANSISTOR DTC144EU
Q 108	5326521	TRANSISTOR 2SA1576
Q 109	5328335	TRANSISTOR 2SB709A-RS-T
Q 201	5326204	TRANSISTOR FMG1
Q 202	5326204	TRANSISTOR FMG1
Q 203	5326421	TRANSISTOR 2SC4081BR
Q 204	5326521	TRANSISTOR 2SA1576
Q 205	5326421	TRANSISTOR 2SC4081BR
Q 206	5326452	TRANSISTOR DTC144EU
Q 207	5326452	TRANSISTOR DTC144EU
Q 208	5326452	TRANSISTOR DTC144EU
Q 212	5326521	TRANSISTOR 2SA1576
Q 213	5326421	TRANSISTOR 2SC4081BR
Q 217	5326452	TRANSISTOR DTC144EU
Q 218	5326421	TRANSISTOR 2SC4081BR
Q 238	5326452	TRANSISTOR DTC144EU
Q 271	5326201	TRANSISTOR FMG2
Q 272	5326421	TRANSISTOR 2SC4081BR
Q 273	5326201	TRANSISTOR FMG2
Q 274	5326452	TRANSISTOR DTC144EU
Q 275	5326421	TRANSISTOR 2SC4081BR
Q 281	5326452	TRANSISTOR DTC144EU
Q 282	5326421	TRANSISTOR 2SC4081BR
Q 401	1323201	TRANSISTOR 2SC2412K (LN)
Q 403	5326242	TRANSISTOR DTB123
Q 404	5326452	TRANSISTOR DTC144EU
Q 405	5326421	TRANSISTOR 2SC4081BR
Q 406	5328351	TRANSISTOR 2SD602R(WR)
Q 407	5326691	TRANSISTOR FMW3
Q 410	5326202	TRANSISTOR FMA2
Q 601	5326201	TRANSISTOR FMG2
Q 602	5326101	TRANSISTOR FMW1
Q 603	5326421	TRANSISTOR 2SC4081BR
Q 751	5326513	TRANSISTOR 2SB1188 (R)
Q 752	5326421	TRANSISTOR 2SC4081BR
Q 753	5326502	TRANSISTOR 2SD1766 (R)
Q 755	5326201	TRANSISTOR FMG2
Q 756	5326452	TRANSISTOR DTC144EU
Q 757	5326452	TRANSISTOR DTC144EU
Q 758	5326206	TRANSISTOR FMC2
Q 759	5326452	TRANSISTOR DTC144EU
Q 799	5333951	TRANSISTOR ON 2170L-Q (LF)
Q 801	5326452	TRANSISTOR DTC144EU
Q 802	1323081	TRANSISTOR 2SA1036K
Q 803	1323081	TRANSISTOR 2SA1036K
Q 805	5326521	TRANSISTOR 2SA1576
Q 806	5326452	TRANSISTOR DTC144EU
Q 807	5326452	TRANSISTOR DTC144EU
Q 809	5326521	TRANSISTOR 2SA1576
Q 981	5326206	TRANSISTOR FMC2
Q 982	5326452	TRANSISTOR DTC144EU
		SEMI-CONDUCTORS
TH 201	5340363	THERMISTOR ERTD2FHL
ZD 801	5337011	ZENER DIODE MA3075L
ZD 803	5337011	ZENER DIODE MA3075L
ZD 805	5337011	ZENER DIODE MA3075L

SYMBOL-No	P-No	DESCRIPTION
ZD 806	5337011	ZENER DIODE MA3075L
ZD 807	5337011	ZENER DIODE MA3075L
ZD 808	5337011	ZENER DIODE MA3075L
ZD 809	5337011	ZENER DIODE MA3075L
		TRANSFORMERS
T 401	5261501	COIL
		COILS
L 101	5159231	COIL 100UH+-10%
L 102	5159231	COIL 100UH+-10%
L 103	5159231	COIL 100UH+-10%
L 104	5159231	COIL 100UH+-10%
L 108	5159232	COIL 12UH+-10%
L 109	5159232	COIL 12UH+-10%
L 204	5159092	COIL 220UH+-10%
L 205	5159248	CHOKE COIL 18UH
L 206	5159226	FILTER 47UH
L 210	5159256	COIL 180UH
L 211	5159231	COIL 100UH+-10%
L 214	5159247	CHOKE COIL 15UH+-10%
L 250	5159247	CHOKE COIL 15UH+-10%
L 272	5159246	CHOKE COIL 10UH+-10%
L 273	5159247	CHOKE COIL 15UH+-10%
L 274	5159257	CHOKE COIL 220UH
L 275	5159253	CHOKE COIL 39UH
L 276	5159253	CHOKE COIL 39UH
L 277	5159246	CHOKE COIL 10UH+-10%
L 278	5159257	CHOKE COIL 220UH
L 401	5152723	CHOKE COIL 22MH+-5%
L 402	5159111	CHOKE COIL 5600UH
L 802	0773004	CHOKE COIL 100UH
		CRYSTALS
X 271	5784551	OSCILLATOR
X 802	5778231	CRYSTAL
		MISCELLANEOUS
CP 201	5172072	TRAP COIL
CP 202	5172211	LC FILTER
CP 203	5172231	LC FILTER
CP 204	5172321	FILTER
CP 271	5172063	BAND PASS FILTER
CP 272	5172074	FILTER
CP 801	5172132	LC FILTER
		MISCELLANEOUS
CX 801	5784531	OSCILLATOR
DL 271	5786094	DELAY LINE
H 801	6810251	HOLDER
LD 799	5382221	LED PLT-462T3
S 801	5634861	SWITCH
S 802	5634861	SWITCH

CAMERA SECTION

SYMBOL-No	P-No	DESCRIPTION
		CAPACITORS
C 101	0209969	CERAMIC CHIP 0.1UF+80-20% 25V
C 102	0209969	CERAMIC CHIP 0.1UF+80-20% 25V
C 103	0209969	CERAMIC CHIP 0.1UF+80-20% 25V
C 104	0209969	CERAMIC CHIP 0.1UF+80-20% 25V
C 105	0209969	CERAMIC CHIP 0.1UF+80-20% 25V
C 106	0209969	CERAMIC CHIP 0.1UF+80-20% 25V
C 107	0209969	CERAMIC CHIP 0.1UF+80-20% 25V
C 108	0209969	CERAMIC CHIP 0.1UF+80-20% 25V
C 109	0202127	CERAMIC CHIP 0.01UF+80-20% 50V
C 110	0202098	CERAMIC CHIP 0.1UF+80-20% 16V
C 111	0202098	CERAMIC CHIP 0.1UF+80-20% 16V
C 112	0209866	CERAMIC CHIP 0.033UF+-20% 25V
C 113	0209846	CERAMIC CHIP 33PF+-10% 50V
C 115	0202098	CERAMIC CHIP 0.1UF+80-20% 16V
C 117	0209866	CERAMIC CHIP 0.033UF+-20% 25V
C 118	0209866	CERAMIC CHIP 0.033UF+-20% 25V
C 119	0209969	CERAMIC CHIP 0.1UF+80-20% 25V
C 120	0209969	CERAMIC CHIP 0.1UF+80-20% 25V
C 121	0209969	CERAMIC CHIP 0.1UF+80-20% 25V
C 123	0209948	CERAMIC CHIP 330PF+-5% 50V
C 124	0202098	CERAMIC CHIP 0.1UF+80-20% 16V
C 125	0202118	CERAMIC CHIP 4700PF+-10% 25V
C 126	0202098	CERAMIC CHIP 0.1UF+80-20% 16V
C 127	0202098	CERAMIC CHIP 0.1UF+80-20% 16V
C 128	0202098	CERAMIC CHIP 0.1UF+80-20% 16V
C 129	0209846	CERAMIC CHIP 33PF+-10% 50V
C 130	0209969	CERAMIC CHIP 0.1UF+80-20% 25V
C 131	0202098	CERAMIC CHIP 0.1UF+80-20% 16V
C 132	0209974	CERAMIC CHIP 1000PF+-5% 50V
C 134	0202146	CERAMIC CHIP 1.0UF+80-20% 16V
C 135	0202146	CERAMIC CHIP 1.0UF+80-20% 16V
C 136	0202055	CERAMIC CHIP 120PF+-5% 50V
C 137	0201037	CERAMIC CHIP 330PF+-5% 50V
C 152	0206521	ELECTROLYTIC 100UF 6.3V
C 153	0256709	ELECTROLYTIC 100UF 6.3V
C 154	0256711	ELECTROLYTIC 47UF 6.3V
C 172	0256790	ELECTROLYTIC 220UF 6.3V
C 173	0256713	ELECTROLYTIC 100UF 10V
C 971	0256822	ELECTROLYTIC 2.2UF 35V
C 972	0256822	ELECTROLYTIC 2.2UF 35V
CT 101	5058576	TRIMMER
		RESISTORS
R 101	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R 102	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R 103	0103862	CHIP RESISTOR 39KOHM+-5% 0.1W
R 104	0103858	CHIP RESISTOR 18KOHM+-5% 0.1W
R 106	0103849	CHIP RESISTOR 3.3KOHM+-5% 0.1W
R 107	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R 108	0103852	CHIP RESISTOR 5.6KOHM+-5% 0.1W
R 109	0103849	CHIP RESISTOR 3.3KOHM+-5% 0.1W
R 110	0103828	CHIP RESISTOR 56 OHM+-5% 0.1W
R 111	0103852	CHIP RESISTOR 5.6KOHM+-5% 0.1W
R 112	0103849	CHIP RESISTOR 3.3KOHM+-5% 0.1W
R 113	0103828	CHIP RESISTOR 56 OHM+-5% 0.1W
R 114	0103852	CHIP RESISTOR 5.6KOHM+-5% 0.1W
R 115	0103849	CHIP RESISTOR 3.3KOHM+-5% 0.1W
R 116	0103828	CHIP RESISTOR 56 OHM+-5% 0.1W
R 117	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R 118	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R 119	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R 120	0104052	CHIP RESISTOR 12KOHM+-5% 1/16W
R 121	0103861	CHIP RESISTOR 33KOHM+-5% 0.1W
R 122	0104056	CHIP RESISTOR 27KOHM+-5% 1/16W
R 123	0103861	CHIP RESISTOR 33KOHM+-5% 0.1W
R 124	0104055	CHIP RESISTOR 22KOHM+-5% 1/16W
R 125	0104044	CHIP RESISTOR 3.3KOHM+-5% 1/16W
R 126	0104048	CHIP RESISTOR 6.8KOHM+-5% 1/16W
R 127	0103861	CHIP RESISTOR 33KOHM+-5% 0.1W
R 128	0104053	CHIP RESISTOR 15KOHM+-5% 1/16W
R 129	0103853	CHIP RESISTOR 6.8KOHM+-5% 0.1W
R 130	0103841	CHIP RESISTOR 680 OHM+-5% 0.1W
R 131	0103859	CHIP RESISTOR 22KOHM+-5% 0.1W
R 132	0103862	CHIP RESISTOR 39KOHM+-5% 0.1W
R 133	0104055	CHIP RESISTOR 22KOHM+-5% 1/16W

SYMBOL-No	P-No	DESCRIPTION
R 134	0103861	CHIP RESISTOR 33KOHM+-5% 0.1W
R 135	0104083	CHIP RESISTOR 33KOHM+-5% 1/16W
R 136	0104066	CHIP RESISTOR 180KOHM+-5% 1/16W
R 137	0103857	CHIP RESISTOR 15KOHM+-5% 0.1W
R 138	0103857	CHIP RESISTOR 15KOHM+-5% 0.1W
R 139	0103857	CHIP RESISTOR 15KOHM+-5% 0.1W
R 140	0104084	CHIP RESISTOR 2.2MOHM+-5% 1/16W
R 142	0103850	CHIP RESISTOR 3.9KOHM+-5% 0.1W
R 143	0103869	CHIP RESISTOR 150KOHM+-5% 0.1W
R 144	0104048	CHIP RESISTOR 6.8KOHM+-5% 1/16W
R 145	0104044	CHIP RESISTOR 3.3KOHM+-5% 1/16W
R 146	0104052	CHIP RESISTOR 12KOHM+-5% 1/16W
R 147	0103849	CHIP RESISTOR 3.3KOHM+-5% 0.1W
R 148	0103844	CHIP RESISTOR 1.2KOHM+-5% 0.1W
R 149	0103842	CHIP RESISTOR 820 OHM+-5% 0.1W
R 151	0103858	CHIP RESISTOR 18KOHM+-5% 0.1W
R 152	0104084	CHIP RESISTOR 2.2MOHM+-5% 1/16W
R 153	0104084	CHIP RESISTOR 2.2MOHM+-5% 1/16W
R 155	0104053	CHIP RESISTOR 15KOHM+-5% 1/16W
R 156	0104043	CHIP RESISTOR 2.7KOHM+-5% 1/16W
R 157	0103828	CHIP RESISTOR 56 OHM+-5% 0.1W
R 158	0103828	CHIP RESISTOR 56 OHM+-5% 0.1W
R 159	0103828	CHIP RESISTOR 56 OHM+-5% 0.1W
R 160	0104051	CHIP RESISTOR 10KOHM+-5% 1/16W
R 161	0104048	CHIP RESISTOR 6.8KOHM+-5% 1/16W
R 162	0103864	CHIP RESISTOR 56KOHM+-5% 0.1W
R 163	0103863	CHIP RESISTOR 47KOHM+-5% 0.1W
R 164	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R 165	0104069	CHIP RESISTOR 330KOHM+-5% 1/16W
R 166	0104068	CHIP RESISTOR 270KOHM+-5% 1/16W
R 167	0104057	CHIP RESISTOR 39KOHM+-5% 1/16W
R 168	0103879	CHIP RESISTOR 1MOHM+-5% 0.1W
R 169	0103867	CHIP RESISTOR 100KOHM+-5% 0.1W
R 170	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R 171	0103849	CHIP RESISTOR 3.3KOHM+-5% 0.1W
R 172	0103848	CHIP RESISTOR 2.7KOHM+-5% 0.1W
R 173	0103853	CHIP RESISTOR 6.8KOHM+-5% 0.1W
R 174	0103863	CHIP RESISTOR 47KOHM+-5% 0.1W
R 175	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R 176	0103869	CHIP RESISTOR 150KOHM+-5% 0.1W
R 178	0103852	CHIP RESISTOR 5.6KOHM+-5% 0.1W
R 179	0103867	CHIP RESISTOR 100KOHM+-5% 0.1W
R 180	0103871	CHIP RESISTOR 220KOHM+-5% 0.1W
R 181	0103865	CHIP RESISTOR 68KOHM+-5% 0.1W
R 182	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R 183	0103849	CHIP RESISTOR 3.3KOHM+-5% 0.1W
R 184	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R 185	0103851	CHIP RESISTOR 4.7KOHM+-5% 0.1W
R 186	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R 187	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R 188	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R 189	0103844	CHIP RESISTOR 1.2KOHM+-5% 0.1W
R 190	0104058	CHIP RESISTOR 47KOHM+-5% 1/16W
R 191	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R 192	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R 193	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R 194	0103856	CHIP RESISTOR 12KOHM+-5% 0.1W
R 195	0104084	CHIP RESISTOR 2.2MOHM+-5% 1/16W
R 196	0104063	CHIP RESISTOR 100KOHM+-5% 1/16W
R 197	0104063	CHIP RESISTOR 100KOHM+-5% 1/16W
R 198	0104051	CHIP RESISTOR 10KOHM+-5% 1/16W
R 199	0104063	CHIP RESISTOR 100KOHM+-5% 1/16W
R 200	0104051	CHIP RESISTOR 10KOHM+-5% 1/16W
R 201	0104063	CHIP RESISTOR 100KOHM+-5% 1/16W
R 202	0104052	CHIP RESISTOR 12KOHM+-5% 1/16W
R 203	0104047	CHIP RESISTOR 5.6KOHM+-5% 1/16W
R 204	0103850	CHIP RESISTOR 3.9KOHM+-5% 0.1W
R 205	0104045	CHIP RESISTOR 3.9KOHM+-5% 1/16W
R 206	0104046	CHIP RESISTOR 4.7KOHM+-5% 0.1W
R 207	0104053	CHIP RESISTOR 15KOHM+-5% 1/16W
RT 101	5040047	SEMI VARIABLE 10KOHM
RT 102	5040046	SEMI VARIABLE 4.7KOHM
RT 103	5040046	SEMI VARIABLE 4.7KOHM
RT 104	5040051	SEMI VARIABLE 100KOHM
RT 105	5040051	SEMI VARIABLE 100KOHM
RT 106	5040051	SEMI VARIABLE 100KOHM
RT 107	5040045	SEMI VARIABLE 2.2KOHM
RT 108	5040047	SEMI VARIABLE 10KOHM
RT 109	5040046	SEMI VARIABLE 4.7KOHM
RT 110	5040046	SEMI VARIABLE 4.7KOHM
RT 112	5040051	SEMI VARIABLE 100KOHM
RT 113	5040045	SEMI VARIABLE 2.2KOHM
SEMI-CONDUCTORS		
D 101	5328321	DIODE MA151K (MH)
D 102	5339201	DIODE 1SV188
D 103	5337031	DIODE 1SV201
D 104	5328381	DIODE MA153(MC)
D 105	5337001	DIODE 1SR143
D 106	5337031	DIODE 1SV201
D 108	5328302	DIODE MA151WA(MN)
D 971	5331671	DIODE DS135D-FA3
D 972	5331671	DIODE DS135D-FA3
IC 001	5318291	CCD IMAGE DEVICE ICX027BX
IC 101	1372422	RESISTOR BLOCK R1913A
IC 102	1372343	IC HT5826B
IC 103	1372432	IC HT5723A
IC 111	5304141	IC HA118003MP
IC 112	1351671	IC HA118142
IC 113	1351681	IC NJM2256M
IC 114	1354321	IC SN74HC126DB
IC 115	1354331	IC SN74HC132DB
IC 116	1354311	IC SN74HC14DB
IC 117	1351591	IC NJM311
Q 101	5328335	TRANSISTOR 2SB709A-RS-T
Q 102	5328335	TRANSISTOR 2SB709A-RS-T
Q 103	5328335	TRANSISTOR 2SB709A-RS-T
Q 104	5328335	TRANSISTOR 2SB709A-RS-T
Q 105	5328335	TRANSISTOR 2SB709A-RS-T
Q 107	5326711	TRANSISTOR IMD2
Q 108	5328793	TRANSISTOR DTC144K-26
Q 109	5326703	TRANSISTOR IMZ1
Q 110	5326703	TRANSISTOR IMZ1
Q 111	5326701	TRANSISTOR IMT1
Q 112	5326701	TRANSISTOR IMT1
Q 114	5326104	TRANSISTOR FMS2
COILS		
L 101	5152942	CHOKE COIL 220UH+-10%
L 102	5153145	CHOKE COIL 100UH+-10%
L 103	5152614	CHOKE COIL 330UF+-10%
CRYSTALS		
X 101	5784401	OSCILLATOR
MISCELLANEOUS		
F 971	5721952	FUSE 2A
F 972	5721952	FUSE 2A
JK 971	5693601	JACK,DC
S 101	5635291	SWITCH
S 201	5634862	SWITCH

SYMBOL-No	P-No	DESCRIPTION
S 202	5634861	SWITCH
S 203	5634861	SWITCH
S 204	5634862	SWITCH
S 205	5634862	SWITCH
S 206	5634861	SWITCH
S 207	5634862	SWITCH
S 208	5634862	SWITCH

ELECTRONIC VIEWFINDER SECTION

CAPACITORS

C 803	0256155	ELECTROLYTIC 10UF 16V
C 805	0256871	ELECTROLYTIC 47UF 25V
C 808	0256752	ELECTROLYTIC 3.3UF 63V
C 809	0201997	CERAMIC DISC 0.1UF+80-20% 50V
C 810	0256155	ELECTROLYTIC 10UF 16V
C 811	0201035	CERAMIC CHIP 220PF+-5% 50V
C 812	0201997	CERAMIC DISC 0.1UF+80-20% 50V
C 814	0201069	CERAMIC CHIP 0.1UF+80-20% 25V
C 817	0201061	CERAMIC CHIP 0.0047UF+-10% 50V
C 818	0256151	ELECTROLYTIC 1UF 50V
C 819	0256151	ELECTROLYTIC 1UF 50V

RESISTORS

R 801	0103856	CHIP RESISTOR 12KOHM+-5% 0.1W
R 802	0103875	CHIP RESISTOR 470KOHM+-5% 0.1W
R 803	0103867	CHIP RESISTOR 100KOHM+-5% 0.1W
R 804	0103881	CHIP RESISTOR 2.2MOHM+-10% 0.1W
R 805	0103881	CHIP RESISTOR 2.2MOHM+-10% 0.1W
R 807	0103879	CHIP RESISTOR 1MOHM+-5% 0.1W
R 808	0103879	CHIP RESISTOR 1MOHM+-5% 0.1W
R 809	0103862	CHIP RESISTOR 39KOHM+-5% 0.1W
R 810	0103859	CHIP RESISTOR 22KOHM+-5% 0.1W
R 811	0103844	CHIP RESISTOR 1.2KOHM+-5% 0.1W
R 812	0103857	CHIP RESISTOR 15KOHM+-5% 0.1W
R 813	0103846	CHIP RESISTOR 1.8KOHM+-5% 0.1W
R 814	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R 815	0103865	CHIP RESISTOR 68KOHM+-5% 0.1W
R 816	0103814	CHIP RESISTOR 3.9OHM+-5% 0.1W
R 817	0103846	CHIP RESISTOR 1.8KOHM+-5% 0.1W
R 818	0103863	CHIP RESISTOR 47KOHM+-5% 0.1W
R 819	0103848	CHIP RESISTOR 2.7KOHM+-5% 0.1W
R 820	0103866	CHIP RESISTOR 82KOHM+-5% 0.1W
R 821	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R 822	0103831	CHIP RESISTOR 100 OHM+-5% 0.1W
R 825	0103871	CHIP RESISTOR 220KOHM+-5% 0.1W
RT 802	5007431	SEMI VARIABLE 470OHM
RT 803	5007792	SEMI VARIABLE 2.2MOHM
RT 805	5007468	SEMI VARIABLE 1MOHM

SEMI-CONDUCTORS

D 801	5328321	DIODE MA151K (MH)
D 802	5337321	DIODE MA199
IC 801	1351631	IC HA118121FP
Q 802	5328241	TRANSISTOR 2SC2463E(DE)

TRANSFORMERS

⚠T 801	5240491	COIL

COILS

L 801	5152607	CHOKE COIL 100UH+-10%
L 802	5273452	COIL

MISCELLANEOUS

⚠CS 801	5886233	SOCKET